



BIG BUSINESS
WHY SIZE STILL
REALLY MATTERS
IN MIDDLE EAST
MEBA SPECIAL P24

CUTTING KJOS
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“slandorous campaigns”
against Irish venture **14**

IN RETREAT
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under way for US Army
aviation after \$12 billion
reduction in budget **18**

FLIGHT

INTERNATIONAL

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2-8 DECEMBER 2014

A400M HANDOVER

BRIZE ASSET

RAF readies for tactical transformation as
it welcomes first Airbus airlifter to new home



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Airbus Defence & Space

COVER IMAGE

Airbus Defence & Space provided this image of **ZM400** – the first of 22 **A400Ms** to be delivered to the **UK Royal Air Force** at its **Brize Norton** base **P9**



BEHIND THE HEADLINES

Operations & Safety Editor **David Learmount** was at Airbus Training in Toulouse to learn about new training philosophies for **A350** crews (**P9**). Defence Editor **Craig Hoyle** travelled to **RAF Brize Norton** for the handover of the UK's first **A400M** (**P9**)



US Air Force

NEXT WEEK AIR FORCES

Don't miss our annual **World Air Forces** directory – the definitive guide to the global fleet of military aircraft

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US Air Force



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Rolls-Royce seals V-22 Osprey maintenance contract P10. UK weapons integration tests take off P19

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IMAGE OF THE WEEK

Vietnam's VietJetAir takes delivery of its first A320 ordered directly from Airbus at a ceremony in Toulouse. The handover marks the start of a major expansion at the airline which will see it acquire up to 100 A320 family aircraft, including 63 on firm order with Airbus. Privately-owned VietJet took to the air in 2011.

View more great aviation shots online and in our weekly tablet edition:



flightglobal.com/
flight-international



Airbus

THE WEEK IN NUMBERS

62%

Flightglobal Insight

The share of the world's military flight simulators in the USA – from Flightglobal Insight's 2014 MiliSim census

\$1.6bn

Flightglobal dashboard

The market value of Bangkok Airways, following the flotation of 24.8% of the carrier on the Thai stock exchange

15

Flightglobal.com

The number of incidents involving UAVs in New Zealand reported to the CAA so far this year – up from 12 in 2013

QUESTION OF THE WEEK

Last week, we asked: **Are France and Germany being protectionist by blocking Gulf carriers from their airports?** You said:

50%

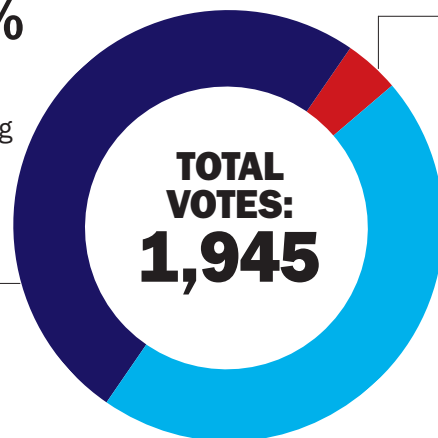
Yes, but only balancing playing field

4%

No, they realise competition is good

46%

Yes, blatantly anti-competitive



This week, we ask: **Will cheaper fuel hurt airliner backlogs?**

- ☐ Yes, airlines will retain older types
- ☐ No, demand to replace aircraft too strong
- ☐ Impossible to predict future oil price

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A tactical surrender

US Army bosses do not like deep budget cuts, but the service's latest restructuring plan is at least an intelligent compromise, and proves lessons have been learned from past mistakes

A decade ago, US Army aviation was broken. It faced a \$14.6 billion bill to buy the first five-year tranche of 121 Sikorsky-Boeing RAH-66 Comanches – a stealth helicopter ideal for fighting a Soviet tank column, but out of place in a war against insurgents on horseback in the Afghan mountains. Meanwhile, the rest of its force emerged from a decade in Comanche's budgetary shadow with little to show for it – and facing a long, bloody struggle in Iraq, Afghanistan and elsewhere.

So, a visionary army leadership struck a bargain with then-Defense Secretary Donald Rumsfeld: give up after spending 20 years and \$7 billion on the RAH-66 and transfer the \$14.6 billion account to launch a sweeping modernisation of army aviation.

This resulted in an immediate influx of new survivability equipment, development funding for what became the network-enabled Boeing AH-64E Apache and production spending on hundreds of remanufactured

The US Army cannot afford another decade like the 1990s, chasing flawed new technology

and new multi-engine helicopters, including the Apache and CH-47 Chinook, Sikorsky UH-60 Black Hawk and Airbus Helicopters UH-72 Lakota. Despite some notable failures along the way, such as the cancellation of the ARH-70 Arapaho to replace the Comanche, the 2004 bargain worked.

Ten years later, a new pact is needed to preserve the force the US Army paid for with the demise of the RAH-66. Sequestration, an annual series of automatic budget cuts enacted by a dysfunctional Congress in



A newer kind of enemy

2012, has forced army aviation to find \$12.7 billion in spending cuts over the next five years.

The aviation restructuring initiative (ARI) unveiled earlier this year shows army leaders still know how to craft a difficult deal with budget cutters. There is no easy target with billions of dollars in savings this time, so top brass instead have focused on keeping the capabilities developed over the last decade. That means getting rid of virtually everything else, including a force of more than 800 single-engine helicopters.

The plan is not without flaws. Pairing unmanned air vehicles with AH-64s is a good idea, but it is still no replacement for a nimble, manned scout helicopter. The ARI may support programmes today that enable the leap to a new generation of high-speed rotorcraft after 2030, but they are unlikely to survive if the budget cuts deeper next year, as widely expected.

The army cannot afford to spend another decade like the 1990s, ignoring critical needs while chasing a flawed new technology like Comanche. The ARI represents a worthy compromise. ■

See Defence P18

Rediscovering training

With the imminent entry into service of the Airbus A350, another modern aviation development comes to fruition – not just the A350 hardware or software, but the “liveware”.

Airbus used the development and delivery of the A350 as a chance to go back to the drawing board with the way it delivers type rating training. In this specific case, that means how it trains qualified pilots and engineers to be A350 pilots and engineers.

Customer and regulator reaction to the results is promising. Airbus is getting comments like “I’m happy to say you got it right”.

It is about time training was reviewed. Today’s aircraft, functionally speaking, are banks of advanced,

multifunctional computers in a tubular projectile. Those trained to control it are already pilots, so all they need to gain is a robust understanding of the specific aircraft and its computerised systems – but also a reminder that it still has a conventional airframe, and that digital computers do not trump analogue aerodynamics.

Airbus has achieved this aim by recognising that the way people learn to understand computers is by experimenting intelligently with them. Airbus calls it learning by discovery, and the revolutionary structure of its A350 type rating course takes full advantage of this, aided by newly developed training tools based on the same philosophy. ■

See This Week P9



Read our archive of *Flight International* comments on editor Murdo Morrison's blog at flightglobal.com/comment



BRIEFING

GREEN LEAVES THOMAS COOK IN BLACK

AIRLINES Thomas Cook has appointed Peter Fankhauser as chief executive following Harriet Green's abrupt departure. Fankhauser was previously chief operating officer at the UK tour operator. Green joined Thomas Cook two years ago with a remit to improve its ailing finances. She says: "I always said I would move on to fresh challenges once my work was complete. That time is now."

FEBRUARY TEST FLIGHT FOR ESA GLIDER

SPACEFLIGHT The European Space Agency's Intermediate eXperimental Vehicle (IXV) – a suborbital glider instrumented to inform spaceplane design – will fly on 11 February 2015. An 18 November launch was postponed to allow further study of the Vega launch vehicle's trajectory. The rocket will fly east from Kourou, French Guiana to put IXV on a 100min path to the Pacific Ocean.

GREECE SEEKS FIGHTER SUPPORT DEAL

SUSTAINMENT The US State Department has approved a possible \$188 million Foreign Military Sales deal to Greece for the continued sustainment of its Lockheed Martin F-16 fleet. The work will enable the Greek air force to maintain interoperability with its US and NATO allies, the US Defense Security Co-operation Agency says.

FIRST SAFRAN BOSS JEAN-PAUL BECHAT DIES

OBITUARY Tributes have been paid to Jean-Paul Bechat, former chief executive of Europe's second-largest engine manufacturer Safran, who has died aged 72. Bechat oversaw the 2005 merger of state-owned aircraft engine manufacturer Snecma, which he headed from 1996, and defence electronics maker Sagem to form Safran. He ran the company for two years before stepping down.

DASSAULT GETS HEAVY ON FALCON MAINTENANCE

MRO Dassault is to build a heavy maintenance, repair and overhaul facility at its Bordeaux-Mérignac facility in southwest France, dedicated to supporting its Falcon 5X, 7X and 8X business jet fleet. The plant will be erected on land adjacent to Dassault's Falcon final assembly base and is scheduled for completion in mid-2016.

PROTON ROCKET FAULT CAUGHT BEFORE FLIGHT

LAUNCHERS International Launch Services pulled a Proton rocket off its Baikonur launch pad on 26 November, when pre-flight testing discovered a faulty upper stage gyro which must be replaced before launching SES Luxembourg's Airbus-built Astra 2G satellite. Proton has been dogged by failures, including a July 2013 mission to orbit three Glonass navigation satellites that ended in a fireball at lift-off.

THALES LOSES CHIEF EXECUTIVE LEVY

APPOINTMENT Philippe Logak has become acting chairman and chief executive of French aviation and defence technology firm Thales following the departure of Jean-Bernard Lévy, who has left to head energy company EDF. Lévy had been at the helm of Thales since 2012.

RYANAIR ADOPTS COCKPIT IPADS

ELECTRONIC FLIGHTBAGS Ryanair has started using Apple iPads as electronic flightbags across its 300-strong Boeing 737-800 fleet. The Irish budget carrier says its pilots will be able to deploy Boeing's "onboard performance tool" for take-off performance calculations and instantly access electronic flight manuals, "which will further improve time management and productivity".

COMMITMENT DAVID KAMINSKI-MORROW ROME

Lion takes largest share of ATR sales

Indonesian group confirms order for 40 more turboprops confirming its position as the airframer's main customer

Indonesia's Lion Group has cemented itself as ATR's largest customer after agreeing to purchase 40 more turboprops from the European airframer, taking its total to 100.

It sealed the order in Rome, in the presence of Italian prime minister Matteo Renzi.

Deliveries of the additional ATR 72-600s, powered by Pratt & Whitney Canada PW127 engines, will run from 2017 to 2019. They will be used to meet demand for further regional capacity over the next five years.

Lion Group chairman Rusdi Kirana, speaking in Rome, described the -600 series as "reliable" and "very competitive".

He admits he is "not an engineer, just a businessman" and that ATR had shown itself to be "really serious" in assisting the carrier in operating the type.

Forty-three ATRs are already in operation with Lion Group subsidiaries. Indonesia's Wings Air has 32, Malindo Air of Malaysia has 10 and a single aircraft operates for Thai Lion Air.

Kirana says he expects Wings Air to account for around 60 of the 100 ATRs. He adds that some will be reserved for new airline operations the company is exploring.

ATR chief Patrick de Castelbajac acknowledges that Lion is a "very demanding" customer but notes that the carrier's low-cost

business model is "proposing solutions that are quite unique".

He adds that the development of the operator's facilities, particularly its maintenance division, is "very impressive".

"I think what Lion Air is planning in terms of MRO is going to be one of the [most significant] in the world," says de Castelbajac.

Italian export credit agency SACE simultaneously approved a \$157 million credit line supporting the purchase of 15 previous Lion ATRs. SACE, which operates in partnership with France's COFACE, says this brings the total number of ATRs it is backing for the Indonesian operator to 37.

"Italy's success on international markets relies on adequate export credit support, which is crucial to reinforce our competitiveness worldwide," says SACE chief Alessandro Castellano.

ATR puts its order total this year at 155, just shy of its record figure of 157. It aims to deliver over 80 aircraft this year, following a production expansion which has trebled the size of its facilities since 2007, and expects around 95 deliveries next year.

The airframer has some 300 aircraft on backlog and, given its expectations on option conversions, it estimates it has stockpiled over four years' worth of production. ■



Subsidiary Wings Air already operates 43 of the turboprops



Unmanned
sense-and-avoid
one step closer
THIS WEEK P10



Airbus Helicopters/Charles Abarr

MAIDEN FLIGHT

German armed forces witness EC645 T2 debut

Airbus Helicopters has performed the maiden flight of the EC645 T2 military utility rotorcraft at its facility in Donauwörth, Germany, in front of representatives of the nation's armed forces. Berlin has an existing order for 15 of the 3.7t helicopters to be used by its air force for commando operations. Deliveries are scheduled to commence in 2015.

SIMULATORS

DAVID LEARMOUNT TOULOUSE

Innovative A350 training wins early approval

Airbus will see its new “learning by discovery” pilot and engineer type-rating training system put to the test for the first time in January as A350 launch customer Qatar Airways prepares to put its aircraft into service.

Director of A350 flight operations and training support Christian Norden says customer feedback from early A350 buyers has been enthusiastic, as has the reaction of national aviation authorities.

Meanwhile EASA and the US Federal Aviation Administration have accepted the A350 as a variant of the A330 series, thus according it a common type rating.

Norden says Airbus has noticed major changes in what airlines look for when introducing a new aircraft into service. “The days of rewriting manuals are gone,” he says. “It’s a cost issue,

All kinds of carriers are now likely to seek turnkey solutions to training needs

but the complexity is too high now. And where manuals used to be written by development engineers, now they are written by Airbus flight operations engineers, with the customers.”

Norden says that all kinds of carriers are now more likely than ever to seek turnkey solutions to training needs, and they expect the original equipment manufacturers to be able to supply them.

The “learning by discovery” concept puts pilots into the A350 full flight simulator far earlier in the type rating course than is traditionally the case.

Airbus has also introduced new training tools including ACE (Airbus Cockpit Experience) – laptop-based software that introduces pilots to the flightdeck via a 360° virtual display. ■

COVER STORY CRAIG HOYLE RAF BRIZE NORTON

RAF lands its first A400M

Tactical transport arrives for aircrew training ahead of operational launch early next year

The UK Royal Air Force has welcomed its first Airbus A400M Atlas tactical transport for training use, as the service makes preparations to stand up its first operational squadron with the type early next year.

Lead aircraft ZM400 was formally revealed at RAF Brize Norton in Oxfordshire on 27 November, some 10 days after it arrived on its delivery flight from Airbus Defence & Space's final assembly site in Seville, Spain. It was flown again the day after its receipt, before remaining on the ground due to an undisclosed technical fault, the RAF says. The transport was used to support ground-based training during this period, but was due to be returned to flight status by the end of that week, the service adds.

The first of 22 A400Ms on order for the UK, production aircraft MSN15 will be followed swiftly by several other RAF examples, with two more expected to be handed over before year-end. The second aircraft was transferred to Airbus's Getafe site near Madrid on 26 November to have its defensive aids system equipment installed, the service says, while a first flight date will soon be set for its third example.

Despite a roughly two-month delay to ZM400 arriving at Brize Norton, programme officials still expect the RAF to be able to declare initial operational capability with the transport in March

2015, following the acceptance of its first seven aircraft and the availability of sufficient trained crews to operate them.

All 22 of the UK's new aircraft will be in use by 2018, with the type to progressively assume responsibility from the RAF's Lockheed Martin C-130Js. This process will start next year, with Atlas crews beginning the process by initially performing strategic transport tasks, the service says. The A400M will also have full capability to support special forces operations by the time the last Hercules leave use in 2022.

Activities are already under way at the A400M Training Services-run “school house”, with a test intake of instructors currently using the facility before 70 Sqn's lead instructors start their course in January. Welcoming the new arrival, minister for defence equipment, support and technology Philip Dunne noted

that the aircraft has been introduced “on time against the re-baselined contract profile, and on-budget”.

The type's introduction with the UK military has also been eagerly anticipated by the aircraft's manufacturer. “We see the RAF's use of the A400M as being the central pillar of a government-supported export strategy,” says Airbus UK president Paul Kahn.

Meanwhile, Airbus Defence & Space executive vice-president military aircraft Domingo Ureña Raso says a new sale of the A400M could still be finalised before the end of the year. “We are working very hard,” he says, pointing to market interest in the type from Latin America, the Middle East and Asia. “We are working with several countries, and the interest is going up.”

“A contract could not be so far away,” he adds, noting: “There are air forces who need to replace a lot of old capabilities.” ■



ZM400 is the first of 22 examples for the UK

Airbus Defence & Space



MRO DAN PARSONS WASHINGTON DC

Rolls-Royce maintains interest in US Ospreys

Rolls-Royce has secured a two-year contract worth up to \$287 million for engine maintenance on US Marine Corps and US Air Force Bell Boeing V-22 Ospreys.

The deal lowers support costs for the type's AE1107Cs by a fleet-wide average of 30% when compared to the five-year MissionCare contract for the services that ran between 2009 and 2014. About 750 of the engines are currently in service.

"This new contract demonstrates confidence from V-22 operators that Rolls-Royce will con-



About 750 AE1107C engines are currently in service

tinue to provide outstanding service and capability to the V-22 fleets," says Tom Hartmann, the company's senior vice-president of customer business. "It allows

us to continually improve the engine, including power and time-on-wing."

R-R has invested \$90 million in seeking improvements to the AE1107C since 2009, also boosting the engine's power by 17% and trebling time-on-wing availability since the US government's initial purchase.

Flight tests have confirmed that a Block 3 turbine upgrade being offered through the MissionCare programme allows an Osprey to hover at 6,000ft at 35°C (95°F) – a key requirement for the US military.

The deal follows a September solicitation by the US Naval Air Systems Command (NAVAIR) that requested information on potential drop-in replacement engines for all variants of the V-22. Hartmann says R-R saw the request as "an opportunity to tell our story – and we did so with the AE1107C".

"Now we have another MissionCare contract under our belt, we consider the RFI closed for business," he says. NAVAIR says no decision has reached yet on whether to pursue a replacement engine programme. ■

See Defence P18

AVIONICS DAN PARSONS WASHINGTON DC

UAV sense-and-avoid one step closer

General Atomics airborne collision avoidance system ruled "functional and ready for flight testing" after Palmdale exercise

General Atomics Aeronautical Systems has taken a leap towards developing a viable sense-and-avoid (SAA) system for unmanned air vehicles – a major requirement for enabling the aircraft to share US national airspace with manned aircraft.

The company has announced the first successful test of a proof-of-concept airborne collision avoidance system, in partnership with the Federal Aviation Administration and Honeywell.

General Atomics has also carried out flight tests with a prototype due regard radar

"Our proof-of-concept SAA system is now functional and ready for extensive flight testing," says Frank Pace, president of aircraft systems at General Atomics Aeronautical Systems.

During tests conducted from the airframer's Gray Butte flight operations centre in Palmdale, California in September, a company-owned Predator B demon-

strated automatic collision avoidance and sensor fusion, which General Atomics says gave its remote pilot "a clear picture of the traffic around the aircraft".

The activity also "proved the functionality" of the automatic collision avoidance system during manoeuvres against aircraft equipped with automatic dependent surveillance – broadcast transponders, it says.

General Atomics is working towards integrating the SAA system on to a Predator B owned by NASA, which will serve as the primary aircraft for further testing through year-end at the Armstrong Flight Research Center in Edwards, California.

This will include collision avoidance encounters and the use of a sensor fusion algorithm being developed by Honeywell.

Meanwhile, General Atomics has also made the first flight tests with a prototype due regard radar, using a manned Beechcraft King Air. The sensor attempted to detect and track multiple test aircraft, including general aviation aircraft, beyond a range of 8.6nm (16km), to support a detect-and-avoid capability. ■



GAAS is working to integrate the SAA technology on to a NASA Predator B

FLIGHT TEST BETH STEVENSON LONDON

Patroller poised for Europe's airspace

Sagem's Patroller unmanned air vehicle has undergone an 11-day flight test campaign to study its future integration into Europe's civil airspace.

Performed between 26 October and 7 November as part of the ODREA airspace integration project, the campaign included 20 tests conducted near Toulouse, France. These included using a sense-and-avoid system developed by Sagem.

The company teamed up with French air navigation and safety agency DSNA, the laboratory of the national civil aviation school (ENAC) and Rockwell Collins France to perform the research under the

Single European Sky ATM Research initiative.

ENAC provided an aircraft to act as an airborne obstruction for the sense-and-avoid system to detect and circumvent. Sagem says the technology was tested in different scenarios and demonstrated an ability to avoid a collision without operator intervention.

The testing also included the Patroller making approaches at Toulouse-Blagnac airport while adhering to air traffic control procedures, demonstrating that a UAV can operate near terminal buildings without having an impact on other traffic. ■



First Charleston
787-9 in assembly
AIR TRANSPORT P12

ROTORCRAFT STEPHEN TRIMBLE WASHINGTON DC

Mi-171A2 makes first flight as home market beckons

Russian Helicopters continues on commercial path, but updated type will not sell in West

Russian Helicopters has completed the first flight of an updated Mil Mi-171A2, marking another major step in the commercialisation of the country's military-oriented rotorcraft industry.

A video posted online by Russian Helicopters shows that the maiden flight began with a hover, before test pilot Salivat Sadriev commanded a clockwise turn around the helipad. The aircraft then lowered its nose, accelerated forward and gained altitude.

The multirole Mi-171A2 is the latest variant in the long-running Mi-8/17 line.

With a maximum take-off weight of 13t and capacity for 24 passengers, it is in broadly the same weight class as Western types such as the Airbus Helicopters EC225 and Sikorsky S-92. However, the Russian type has carved a niche for itself as a robust utility helicopter well suited for operations in harsh environments – such as those found in its home market.



The rotorcraft is the latest variant in the venerable Mi-8/17 line

Based on the military Mi-171Sh, the A2 replaces the type's two Klimov TV3-117 engines with a pair of 2,700shp (1,990kW) VK-2500PS-03 powerplants with full authority digital engine control. It also integrates the Kret KBO-17 avionics suite, which updates the analogue flightdeck with glass cockpit dis-

plays. The variant's improved rotor system also incorporates a new rotor hub and swashplate.

Russian Helicopters will not seek certification for Western markets with the new development, but it is instead marketing the model for domestic operators. Certification is scheduled for 2015. ■

UNMANNED
ELLIS TAYLOR SINGAPORE

New Zealand to review UAV rules

New Zealand's Civil Aviation Authority plans to issue a notice of proposed rulemaking on 4 December to establish regulations covering the use of unmanned air vehicles.

Current regulations governing the use of UAVs were designed for model aircraft, but many modern types have advanced performance characteristics and bring additional risk which will likely require certification, the CAA says. Fifteen incidents involving UAVs have been reported so far this year, it adds – up from 12 in 2013.

"We want to make sure the new rules do not impose an undue regulatory burden on operators," the CAA's general manager general aviation, Steve Moore, says. "We want to make sure that recreational users can still operate in a low-risk environment, and will modify the existing rules so they can continue to do this where appropriate."

A consultation period on the proposed new regulations will be open until 30 January 2015. ■



For more coverage of the unmanned air system sector
flightglobal.com/UAV

SUCCESSION STEPHEN TRIMBLE WASHINGTON DC

UTC names new chief after Chenevert retirement

Louis Chenevert has retired as chairman and chief executive of United Technologies after a nearly five-year tenure that saw its expansion via the acquisition of Goodrich and initial flight testing of the PurePower family of geared turbofan engines.

No explanation has been given for the abrupt departure of the 58-year-old executive, which was announced on 24 November. UTC's board has elected Greg Hayes, formerly senior vice-president and chief financial officer, to become its new president and chief executive.

"The board thanks Mr Chenevert for his 22 years of service and for his contributions and impor-

tant transformational initiatives," says Edward Kangas, the company's lead independent director.

Chenevert succeeded George David as chief executive in January 2010. He dramatically expanded the size and capabilities of the company's aircraft systems division, combining Hamilton Sundstrand and Goodrich under the new UTC Aerospace Systems brand. The former Pratt & Whitney chief executive also oversaw the launch of the PurePower engine family and the acquisition of Rolls-Royce's share of the International Aero Engines consortium, establishing P&W as a major force in propulsion systems for large business jets, regional jets

and narrowbody aircraft, with positions on the Airbus A320neo and Bombardier CSeries.

No explanation has been given for the abrupt departure of the 58-year-old company executive

However, UTC also struggled to overcome a multi-year procurement delay with Canada's Sikorsky S-92-based maritime helicopter programme, which led to a \$1 billion write-down. More recently, P&W engine failures on

the Lockheed Martin F-35A and a CSeries test aircraft forced both to miss anticipated debuts at the Farnborough air show in July.

However, Hayes inherits a company poised for growth, with the PW1100G-powered A320neo, PW1500G-equipped CSeries and F135-powered F-35B all scheduled to enter service in late 2015.

At the same time, the company must navigate slower defence spending and increasing cost pressure on commercial programmes, such as the Boeing 787.

UTC reaffirms that its financial expectations remain on track for 2014, including sales of about \$65 billion. ■



APPROVAL
DAVID KAMINSKI-MORROW LONDON

Sukhoi secures VNAV clearance for Superjet 100

Sukhoi's civil aircraft division has clinched certification for full vertical navigation capability on its Superjet 100 twinjet.

Approval for the use of VNAV across all phases of flight has been granted by Russia's Interstate Aviation Committee.

The function handles the Superjet's vertical profile during the flight, from climb through the en route cruise and descent.

Sukhoi says it provides a greater degree of automatic control along the pre-set flightpath and reduces workload for the crew.

The airframer claims the Superjet is the first Russian-built aircraft to secure such extensive VNAV certification.

Sukhoi carried out 24 certification flights using one of its prototype Superjets

Sukhoi carried out 24 certification flights using one of its prototypes, aircraft 95003, at Zhukovskiy airfield outside Moscow. It also performed 58 virtual flights on an electronic integration rig.

Certification and quality chief Igor Vinogradov says the manufacturer intends to pursue VNAV clearance for the long-range Superjet 100LR, and also obtain European validation of the approvals. ■

PROPULSION **STEPHEN TRIMBLE** WASHINGTON DC

GE seeks material benefits

Engine maker begins GE9X combustor lining tests crucial to hitting environmental targets

GE Aviation has launched a two-year series of rig tests on a new combustor material critical to achieving fuel efficiency and reduced emissions targets for its GE9X turbofan engine.

The 100,000lb-thrust (445kN) GE9X is required to deliver a 10% improvement in fuel efficiency over the GE90 for the Boeing 777X, along with a 30% margin to the nitrous oxide (NOx) emission standard that became effective in 2013.

The key to achieving lower NOx emissions is a new high-temperature combustor liner, which can reduce the film air cooling

necessary to prevent the wall of the combustor from melting.

With research assistance from NASA, GE developed the first carbide-fibre-reinforced silicon carbide ceramic matrix composite (CMC) material for the heat-shielding liner of a new combustor design. Known as the twin-annular, pre-swirl (TAPS) system, the GE9X will feature the third generation of the design, with a new combustor dome and CMC inner and outer liners.

"The TAPS III combustor for the GE9X takes combustion technology to the next level," says Bill Millhaem, general manager

of the GE90/GE9X programmes. A full annual rig combustor test last September demonstrated that the liners will survive at dynamic loads "well beyond" anticipated temperatures when the GE9X enters service in 2020. More rig testing with GE9X-sized combustors will be conducted through 2016.

Future tests will be performed in a \$100 million combustion test cell now being erected at GE Aviation's headquarters in Evendale, Ohio. GE plans to deliver the first engine to test in 2016, with flight tests beginning one year later and engine certification scheduled in 2018. ■

SAFETY **DAVID KAMINSKI-MORROW** LONDON

EASA orders checks on A380 doors

Airbus A380 operators have been instructed to examine the type's upper and main deck doors for signs of fatigue cracking.

EASA is ordering repetitive detailed inspection of the upper outer skin areas of the doors. The agency says the directive follows the discovery, during fatigue testing, of cracking on this area of the doors, below the cover plate.

Airbus has issued service bulletins containing inspection instructions for the combined 16 doors on both decks. It has developed modifications that have been included in A380 production, while a reinforcement of



The upper and lower decks have a total of 16 doors

the structure has been made available to in-service aircraft.

EASA is aiming the directive at aircraft which have not undergone the modifications.

Although the directive does not refer to the incident, a Singapore Airlines A380 undertook a

diversion in January after sustaining damage to a main deck door.

Airbus subsequently stated that it had traced the problem to separation of the cover plate fitted above the door, and would develop a modification by the end of this year. ■

PRODUCTION

Charleston 787-9 begins assembly

Boeing has started assembling the first 787-9 to be built at its Dreamliner factory in Charleston, South Carolina. The milestone comes about 18 months after final assembly of the first 787-9 began in Everett, Washington, and five months after Boeing delivered the first stretched Dreamliner model to launch customer Air New Zealand. Boeing also confirmed that United Airlines will be the first customer to take delivery of a Charleston-built 787-9. The 787-9 and shorter 787-8 are Boeing's only commercial aircraft programmes with two assembly sites. Boeing plans to build the 787-10 exclusively in Charleston, where the assembly hangar is larger than in Everett.





Boeing admits lack of slots behind big lost Delta order
AIR TRANSPORT P14

MISSING AIRCRAFT DAVID KAMINSKI-MORROW LONDON

ICAO plea for practice drills in case of another MH370

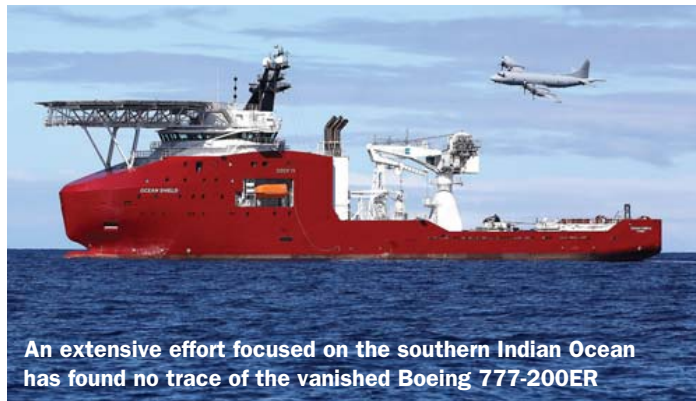
Working group recommends exercises to promote 'integrated' approach to any future search

ICAO is supporting a proposal to conduct exercises to ensure that key stakeholders can respond in a co-ordinated manner to an event similar to the disappearance of Malaysia Airlines flight MH370.

An ad-hoc working group, formed to develop operational concepts for flight-tracking, has determined that there is no consolidated contact list enabling rapid connection between airlines, air navigation services and rescue centres.

"Development of such a contact list, as well as a communications protocol to support rapid communications between the stakeholders, is one of the key areas for improvement," says an ICAO paper prepared for a high-level safety conference set to take place in February 2015.

It states that the organisation is



An extensive effort focused on the southern Indian Ocean has found no trace of the vanished Boeing 777-200ER

Rex Features

"giving consideration" to provisions requiring states to run regular practice exercises, to verify the ability of airlines, air traffic services and rescue centres to respond "in an integrated manner" to abnormal flight behaviour.

Search and rescue specialists will assist in developing such exercises and ICAO says it will carry

out a drill in each of its main regions over the next two years.

Flight MH370 vanished en route to Beijing on 8 March and an extensive search effort – focused on the southern Indian Ocean, thousands of kilometres from last contact – has yet to turn up any trace of the Boeing 777-200ER or its occupants. ■

FLEET DAVID KAMINSKI-MORROW LONDON

First of four E-190s delivered to RAM

Royal Air Maroc has started taking delivery of a batch of four Embraer 190s, the first jet having arrived on 22 November. The Moroccan flag-carrier says it is intending to take the remaining three by 15 December. It has configured the aircraft with 100 seats: 12 in the business-class cabin and 88 in economy.

RAM says it took the Embraers after an eight-month test of two similar jets in 2013, part of an examination of 100-seat aircraft. The airline is looking at a broad fleet expansion which will probably include several jets in the same size category.

This will allow the carrier to "better match supply to demand"

and improve the connectivity of the Casablanca hub. RAM says the acquisition will take to 52 the number of aircraft it operates.

The airline is to introduce the first of five Boeing 787s shortly – it had recently indicated that the 787 would arrive in December, but its latest statement suggests January 2015. ■



AirTeamImages

The Moroccan flag-carrier trialed the Embraers in 2013

OPERATIONS

JON HEMMERDINGER
WASHINGTON DC

FAA contingency plan following ATC fire outage

The US Federal Aviation Administration (FAA) has outlined a multi-step plan aimed at ensuring it can return air traffic to near normal operations within 24h of a major outage, following a fire that affected the airspace around Chicago in September.

"The FAA plans to immediately begin to revise its contingency strategy... to include the operational efficiency goal of achieving 90% of normal operations within 24hr of a major outage," says the FAA in a report released today.

The report, which outlines a series of security, technology and operational improvements, is the product of a 30-day review the agency initiated following the September fire at an air traffic control centre in Aurora, Illinois.

The fire, started by an FAA-contracted employee, shut down the centre, causing hundreds of flight cancellations. The airspace returned to normal on 13 October.

The report outlines three phases of improvements, which the agency cautions "can be executed only if resources are made available". The first would see the agency ensure voice communications and a variety of radar, flight planning and weather data can easily transfer between facilities when airspace management is reconfigured.

The FAA's goal is to reduce its outage response time from "days to hours" within 12 months.

In the second phase the FAA will reduce manual workload during contingency operations, partly by automating flight plan distribution and "hand offs" between facilities. The agency forecasts these improvements could be implemented by fiscal year 2018.

The third stage will see the FAA better leverage a number of technologies envisioned as part of its NextGen air traffic control system, including automated dependent surveillance-broadcast technology (ADS-B). ■



REGULATORY GHIM-LAY YEO
WASHINGTON DC

Norwegian boss takes fight to 'enemy' capital

Norwegian chief executive Bjørn Kjos has come out fighting against the airline's US critics, calling for a stop to "slandrous campaigns" against the Oslo-based budget carrier's bid to secure approval to begin a US long-haul service with its Irish subsidiary.

"We are used to being stopped," Kjos said during a speech at the International Aviation Club in Washington DC. "We know how to fight back against slanderous campaigns."

Kjos was referring to a legal tussle between Norwegian and SAS Group that dates from 2006, which eventually found SAS guilty of spying on Norwegian's reservation systems.

Norwegian is facing an uphill battle in securing approval from the US Department of Transportation to allow it to transfer US-bound flights from its Norwegian long-haul subsidiary to its new Dublin-based operation, Norwegian Air International (NAI).

The DoT dismissed part of NAI's application in September, denying its application for exemption authority to begin US flights.

"We are used to being stopped. We know how to fight back"

BJØRN KJOS

Chief executive, Norwegian

The DoT has yet to issue a decision on NAI's foreign air permit application.

US airlines and labour groups have lobbied for authorities to reject the application, saying Norwegian is seeking to launch long-haul flights from its Irish subsidiary to take advantage of less strict labour laws in Ireland.

Norwegian's critics also accuse the airline of planning to use crew based in Asia in order to pay lower salaries. ■



The carrier has ordered 25 A330-900neos

COMMITMENT STEPHEN TRIMBLE WASHINGTON DC

Boeing admits lack of slots behind big lost Delta order

Delivery timing to blame for missed deal after Airbus bags 50-strong widebody contract

Boeing attributes the loss of a 50-aircraft Delta Air Lines order announced on 20 November to a lack of available delivery slots.

"Boeing competed for the order with the 787-9, but we did not have enough 787 positions available in the timeframe that met Delta's requirement," the company said in a statement.

Delta instead ordered 25 Airbus A350-900s and 25 A330-900neos, with deliveries beginning in 2017 for the former and 2019 for the latter.

Flightglobal's Ascend Fleets database shows 132 overall 787 delivery positions claimed in 2017, leaving only 12 available slots at planned production rates.

The same database anticipates 113 deliveries of the A350-900 in 2017.

Airbus announced the signing of the deal with Delta as a "massive endorsement" for the company's widebody portfolio, offering two aircraft types in the same class, optimised for different roles. ■



ACCIDENT JON HEMMERDINGER
WASHINGTON DC

Two Southwest 737s in Dallas ground collision

A pair of Southwest Airlines Boeing 737s collided on the ground at Dallas Love Field, with one sustaining "substantial damage", according to a preliminary accident report from the US Federal Aviation Administration.

One of the 737s, N263WN, was taxiing when it collided with the other aircraft, which the FAA does not identify with a registration number. That aircraft was not moving at the time.

Southwest says the unmoving aircraft was operating flight 313 and had just arrived from Chicago, but did not provide its registration number. "Southwest flight 313 briefly came into contact with another Southwest aircraft while awaiting the availability of a gate," the airline says. ■

FLEETS

SkyWest to retire ageing Brasilias

SkyWest is to retire its last Embraer EMB-120 Brasilia turboprops as the regional airline industry shifts towards larger jet aircraft. The carrier plans to add 27 Embraer 175s with 76 seats to its fleet with United Airlines by the end of 2015, and has firm and conditional orders for another 60 E175s, 100 E175-E2s and 100 Mitsubishi MRJ90s, according to Flightglobal's Ascend Fleets database. See flightglobal.com/survivors for a list of older types still being operated by airlines around the world.

“

“The 787 is at the forefront of our fleet modernization.”

“This revolutionary aircraft is enabling us to consistently provide a world-class experience to our guests across our network of destinations, explore new markets and improve our economic performance.”

“It truly sets us apart as the ‘Pride of Africa.’”

”

Mbuvi Ngunze
CEO
Kenya Airways



THE DREAMLINER EFFECT.
KENYA AIRWAYS SUCCESS.

ORDERS STEPHEN TRIMBLE WASHINGTON DC

What price cheaper fuel?

The plummeting cost of oil is good news for airlines, but it might not be so healthy for swelling airliner backlogs

After a decade of soaring oil prices being high on the aviation agenda, fuel is suddenly looking very affordable. But the fact that prices appear headed for a long-term retreat does not so far imperil the five-digit order backlogs collectively amassed by Airbus and Boeing.

The US Energy Information Agency has slashed its 2015 forecast for Brent crude oil to an average of \$83 per barrel – \$18 per barrel lower than predicted only a month ago. Meanwhile, another popular benchmark, West Texas Intermediate, is trading below \$76 per barrel, according to Flightglobal sister company ICIS.

The effect of over-supply to the market could be offset if OPEC nations slash production, but no such consensus appeared to have emerged as the cartel's annual summit began on 27 November. Some analysts believe that the dollar price of a barrel of oil could drop to the mid-60s if output is not reduced.

LOWER BILLS

Despite the prospect of a prolonged period of lower fuel bills, manufacturers do not appear to be panicking. James McNerney, Boeing's chief executive and chairman, reassured Wall Street analysts a month ago that his company's commercial order backlog would not be threatened until the price of a barrel of oil is "well south" of \$70.

McNerney's analysis checks out with Rob Morris, head of Flightglobal's Ascend consultancy. Morris compares operating costs of a leased Airbus A320 equipped with sharklets to a leased re-engined A320neo with a 13% lower block hour fuel burn. Although the monthly lease rate for the A320neo is assumed to be 13.7% higher, the re-engined aircraft is still cheaper to operate until a barrel of crude de-



High fuel prices tend to drive demand for modern, efficient aircraft

clines below \$55, Morris says. "I don't believe this will be a sustainable long-term [oil] price," he adds. "So the case for the next generation sustains."

This analysis contradicts the notion that lower fuel prices tend to stifle demand for buying new aircraft. This is a view that was recently explained by Walter Howley, chairman and chief executive of TransDigm, a component supplier to Airbus and Boeing.

"The traditional rule of thumb is if oil prices drop down, they keep the old planes running longer and that would tend to give you a little more aftermarket. Whether that'll happen, I have no idea. But that's the traditional wisdom," Hawley told analysts in October.

In an era when production lines are sold out for several years, there are some prominent industry officials who believe the conventional wisdom no longer applies.

Air Lease president and chief operating officer John Plueger notes that predicting long-term

oil price trends is a dangerous game for any airline.

"The most effective way to hedge against fuel price volatility is with the most fuel efficient and modern aircraft," he says. "Our

"The traditional rule of thumb is if oil prices drop, [carriers] keep old planes running longer"

WALTER HOWLEY
Chairman and CEO, TransDigm

customers are taking long-term views on their needs over the next decade, which is helping demand remain very strong."

This new paradigm applies even if oil prices remain at comparatively lower levels for a prolonged period, Plueger says. He cites the example of Allegiant Airlines, which recently decided to buy A319s and search for A320s to replace older, less-efficient

McDonnell Douglas MD-80s that are subject to corrosion problems common to ageing aircraft.

"Even if fuel prices went down, it's still going to be the major cost, so why not continue to reduce fuel burn?" Plueger says. Another prominent lessor, AirCap chief executive Aengus Kelly, agrees that demand for new aircraft will not decline in the long run in response to lower fuel prices.

BEST HEDGE

"We don't see any evidence yet that our customers are altering their longer-term fleet plans based on the recent decline in the price of oil," Kelly told analysts in October. "They are, of course, looking to extend some older assets. But overall, the longer-term view of the airlines is that the best hedge against their single largest exposure item is a modern fuel-efficient fleet."

Although this seems promising, there are some important caveats. Fuel prices are not the only major ingredient that created the five-digit order backlogs today. The industry has benefited from an unusual combination of extremely high fuel prices and historically low interest rates, says Richard Aboulafia, vice-president at the Teal Group consultancy.

As fuel prices are trending lower, central bankers in New York and London are discussing raising interest rates, meaning that new aircraft could soon be marginally more expensive to buy and incrementally more expensive to operate.

"The real danger isn't just \$70/bbl fuel; it's \$70/bbl fuel and higher interest rates," Aboulafia says. "We're living in an impossibly perfect world in terms of this combination of drivers. The OEMs would be very wise to moderate their production ramp plans; after all, things seldom stay perfect forever." ■

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STRATEGY STEPHEN TRIMBLE WASHINGTON DC

Army aviation holds course on restructuring programme

Controversial initiative seeks to balance budget cuts with drive to enhance capabilities

The US Army has started executing a plan that will lead to the reshaping and downsizing of a war-weary aviation branch, as it attempts to both upgrade its capabilities and cut more than \$12 billion in spending over the next five years.

Unveiled earlier this year, the aviation restructuring initiative (ARI) represents the most ambitious proposal to transform the aviation branch since the cancellation of the army's Sikorsky/Boeing RAH-66 Comanche programme in 2004.

Among the ARI's initiatives is a move to divest all of army aviation's more than 800 single-engined helicopters. This process will retire its Bell Helicopter OH-58D Kiowa Warrior armed scouts without a replacement, plus its fleet of OH-58A/C advanced trainers. The service's Bell 206 JetRanger-derived TH-67 Creek primary trainers will also be sold as surplus equipment, in a step that has raised concerns from lawmakers over its potential to flood the market with more than 180 cheap aircraft.

More controversially, the army is also seeking to rebalance its active and reserve fleets by forcing the National Guard to transfer its Boeing AH-64 Apache attack helicopters in exchange for Sikorsky



The service's OH-58D Kiowas are to be retired

UH-60 Black Hawk utility transports. It also would acquire 100 more Airbus Helicopters EC145/UH-72A Lakotas for the National Guard, and transfer more than 100 of its existing examples to replace the TH-67 trainers.

The OH-58D's armed scout mission will be absorbed by AH-64D/Es, which will be operated alongside AAI RQ-7B Shadow and General Atomics Aeronautical Systems MQ-9 Gray Eagle unmanned air vehicles.

Speaking at the Federal City chapter of the American Helicopter Society, Col John Lindsay, director of army aviation operations and plans, defended the scheme from critics in Congress and the National Guard. He de-

scribes the ARI as the best possible solution to a problem caused by sequestration budget policy which removes \$79 billion in planned outlays to the army's budget over the next five years, while also protecting its newest and most capable aircraft.

However, Lindsay acknowledges that the initiative may not be enough. The ARI scheme will currently allow the army to recapitalise its multi-engined aircraft fleet while also investing in next-generation rotorcraft programmes, such as the joint multi-rotor technology demonstration.

However, if Congress does not repeal or reduce sequestration budget cuts in fiscal year 2016, the reductions must go deeper. ■

REQUIREMENT

DAN PARSONS WASHINGTON DC

Tokyo tips V-22 for tiltrotor buy

Japan has hinted at plans to purchase a fleet of Bell Boeing V-22 Osprey tiltrotors, and has included funding for the aircraft in its 2015 defence budget.

Posted on the Japanese defence ministry website, the budget document says "source selection is under way" for a tiltrotor type. While Tokyo has not directly specified the V-22, it displayed a generic rendering of an aircraft resembling the US type.

Japan has not specified how many aircraft it intends to buy, but Bell Helicopter chief executive John Garrison recently said it had already budgeted for 17 of the aircraft as part of a long-term spending plan – a number also cited by other industry sources.

Tokyo says a tiltrotor fleet is being sought "with a view to enhance unit deployment capabilities in amphibious operations", and to "complement and strengthen the capabilities of transport helicopters in terms of cruising speed and range".

Boeing says it will work with its V-22 partner Bell and the US government in order to complete the potential Foreign Military Sales deal. ■

Boeing says it will work with Bell and the US government to complete the deal

ACQUISITIONS

Deliveries on track as sixth Indian P-8I arrives

India's navy has taken delivery of its sixth 737-based P-8I from an existing order for eight of the Boeing-produced maritime patrol aircraft.

Transferred to the service's Rajali naval air station in late November and scheduled to commence flight trials "in the coming

months", aircraft IN325 follows a previous five examples which are "currently conducting missions", Boeing says.

The company adds that it is on track to deliver the export customer's remaining two examples in 2015. Flightglobal's Ascend Fleets database records New



IN325 joins a fleet which is "currently conducting missions"

Delhi as having options to acquire up to 16 more P-8Is.

See next week's issue of *Flight International* for our annual World Air Forces directory,

which details the almost 52,000 military aircraft in service with nations around the globe, plus more than 5,200 on-order examples. ■



Details emerge on bids for rotorcraft training contract
DEFENCE

MANUFACTURING DAN PARSONS WASHINGTON DC

Latest F-35 deal delivers cost saving

Eighth low-rate initial production contract settled at an average of 3.5% less per aircraft than previous 2013 agreement

Lockheed Martin and the US government have finalised a \$4.7 billion contract for the Joint Strike Fighter programme's next production lot of 43 F-35 Lightning II combat aircraft.

Included in the eighth low-rate initial production (LRIP) deal are 29 jets for the US military and 14 to be delivered to five international customers, along with a \$500 million allocation which will cover advanced procurement funding for later productions lots, says the F-35 joint programme office (JPO).

Prime contractor Lockheed is under pressure to bring down per-unit costs for the F-35 with each new production lot agreed with the Department of Defense. The LRIP 8 settlement has been reached at an average 3.5% less per aircraft than the previous lot signed in 2013, and 57% lower than during the US government's initial purchase, the JPO says.

"[The] LRIP 8 contract terms continue to eliminate the government's exposure to risk by having Lockheed Martin cover 100% of any cost overruns," the JPO says. Additionally, "the government and Lockheed Martin will share returns derived from any under-runs in target cost" at a respective 20% to 80% ratio, it adds.

Detailing the agreement on 21 November, the JPO lists the per-variant airframe costs in LRIP 8 as being \$94.8 million for the conventional take-off and landing F-35A, \$102 million per short take-off and vertical landing



The US Air Force will receive 19 F-35As under the settlement

F-35B and \$115.7 million for each carrier-variant F-35C. These figures exclude the cost of the type's Pratt & Whitney F135 engine, however, as these will be purchased separately.

P&W has agreed to shoulder 100% of the cost to modify fielded engines and redesign future production examples, having identified a fix for the third-stage rotor friction issue that caused a fire in an F-35A earlier this year.

An engineering change proposal is expected to be submitted in mid-to-late December to finalise the modification, the JPO says.

Under its LRIP 8 contract, the DoD will buy 19 F-35As for the US Air Force, six F-35Bs for the US Marine Corps and four F-35Cs for the US Navy. The deal also includes the first two and four F-35As, respectively, for Israel and Japan, and two each for Italy and Norway, plus the first four produc-

Lockheed is under pressure to bring down per-unit costs for the F-35

tion F-35Bs to be built for the UK. Deliveries will commence in 2016.

The new contract also contains a concurrency clause, which requires Lockheed to split costs down the middle with the government for known concurrency changes arising from system development and demonstration phase activities.

Performance-based payments also will be made to the company on it meeting specified performance criteria for the fifth-generation strike aircraft.

Lockheed says it has so far delivered 115 F-35s to the US armed services, plus initial operational test and evaluation partner nations the Netherlands and the UK. ■

PAYLOADS CRAIG HOYLE LONDON

UK weapons integration tests take off at Patuxent River

A UK test team has completed an initial series of handling flights of a Lockheed Martin F-35B Lightning II carrying trial rounds of the Raytheon Systems Paveway IV precision-guided bomb and MBDA's ASRAAM short-range air-to-air missile.

An undisclosed number of flights were conducted with the weapons from the US Navy's Patuxent River test centre in Maryland, the Ministry of Defence says.

"These initial tests are an important step in integrating weapons on to the F-35B, allowing test pilots to understand how they affect the way the aircraft performs and handles," it adds.

The MoD on 24 November confirmed an order for its first four production examples of the short take-off and vertical landing type, as part of the US programme's eighth lot of low-rate initial production.



ASRAAM and Paveway IV will be key weapons for the UK's F-35Bs

"The contract for F-35B aircraft forms part of the MoD's investment in Lightning II over the next five years to procure an initial 14 of these multirole, fifth-generation aircraft, as well as putting in place the necessary support arrangements and infrastructure. Further contracts will cover the procurement of a range of equipment, such as engines."

Three B-model aircraft are already being used by the UK in support of initial operational test and evaluation of the Joint Strike Fighter in the USA, with a fourth to be delivered early next year.

Long-lead items for nine more production aircraft are expected to be ordered before May 2015, the MoD confirms. ■

LRIP 8 CONTRACT

Nation/operator	Variant	Number
US Air Force	F-35A	19
US Marine Corps	F-35B	6
US Navy	F-35C	4
Japan	F-35A	4
UK	F-35B	4
Israel	F-35A	2
Italy	F-35A	2
Norway	F-35A	2
Total		43

SOURCE: F-35 Joint Programme Office



UNMANNED SYSTEMS

BETH STEVENSON LONDON

Airbus pitches Zephyr UAV for disaster relief

Airbus Defence & Space is planning to offer its Zephyr high altitude pseudo-satellite for use during disaster relief missions, with the unmanned air vehicle to feed data to the Deployable Communication and Information System (DCIS) the company has developed for NATO.

"UAVs and aircraft collect lots of imagery," notes strategic business manager Steve Whitby. "How do you get that back to whoever needs it?"

In the disaster relief role, the company's communications relay Mobile IP Node could be integrated on to airborne command and control platforms and other surveillance aircraft to pass data to the long-endurance Zephyr, Whitby says. "This will easily provide the user with a communications hub; particularly in scenarios such as disaster relief, when there is no infrastructure," he says, describing the combination of systems as providing a low-cost and easily deployable surveillance capability.

The Zephyr has already demonstrated its ability to remain airborne for 35 days, and Airbus expects to carry out 90 days of tests with the type by the end of 2015.

Speaking on 25 November, Whitby said Airbus is waiting to deliver three DCIS for use by the NATO Response Force, following a successful trial conducted in Poland in March.

Designed to be transported by a single Lockheed Martin C-130 through a programme worth around £50 million (\$80 million), the system can facilitate operations involving just a few operators or up to 500 users.

NATO is studying whether the system could be inserted via precision parachute drop, and is also in discussions with Airbus about the potential development of a smaller variant. ■



For more coverage of the
unmanned air system sector:
flightglobal.com/UAV

DEVELOPMENT DAN PARSONS WASHINGTON DC

Jammer prototype passes first test

Raytheon has tested a prototype of the US Navy's next-generation jammer (NGJ) pod against simulated enemy radar threats, in the first "end-to-end" assessment of the integrated electronic attack system.

Designed to replace the analogue ALQ-99 tactical jamming system carried by the Boeing E/A-18G Growler with a digital electronically-scanned radar jammer, the NGJ demonstrator was carried by a Gulfstream GIII business jet for the tests at the navy's China Lake range in California.

"Eight months after award of the NGJ programme we successfully flew the integrated prototype against representative threat



The system is to replace the ALQ-99 unit on the USN's Growlers

radars," says Travis Slocumb, vice-president of electronic warfare systems at Raytheon Space and Airborne Systems.

"The combination of techniques, array-transmit power and jammer management were very

effective against the threat systems and all test objectives were met or exceeded," the company adds.

Raytheon is the sole participant in the current engineering and manufacturing development phase of the NGJ programme. ■

REQUIREMENT DOMINIC PERRY LONDON

Details emerge on bids for rotorcraft training contract

Airbus Helicopters, Cobham and Elbit Systems in battle to supply UK's future rotary fleet

Three bidders and a trio of manufacturers are in the running to supply a fleet of helicopters for use by the UK armed forces under the Military Flying Training System programme.

Being run by Lockheed Martin-Babcock joint venture Ascent, which delivers MFTS, the contest has attracted responses from Airbus Helicopters UK, Cobham and Elbit Systems. No further details have been released, with the

bidders declining to comment, but *Flight International* understands that Airbus Helicopters is offering its EC135 and EC145 light and medium twins, Cobham an AgustaWestland-based solution – likely to be the skid-equipped AW109 Trekker light twin – and Elbit the Bell Helicopter 407.

Paul Livingston, Ascent managing director, declines to reveal the specifics of the offers, but says its request for proposals did not

specify a particular rotorcraft type, whether it should be single- or twin-engined or the number required.

"They will pick a platform and work out how many they need in order to provide the number of training hours the Ascent syllabus demands," he says of the rival bidders. "We are confident from Ascent's point of view that the competition is going to present us with a diverse range of options across these bidders."

Ascent hopes to present its recommended solution to the Ministry of Defence by the third quarter of 2015, with a contract award anticipated in early 2016.

Training delivery is scheduled to start from April 2018 at the Royal Air Force's Shawbury base in Shropshire, following the end of Cobham's contract at the Defence Helicopter Flying School in March that year.

This currently uses 24 Airbus Helicopters AS350 Squirrel HT1s and 11 Bell 412 Griffin HT2s. ■



Bell 412 Griffin HT2s will be replaced with a new type from 2018



Piaggio comforts
Avanti II owners
with interior retrofit
BUSINESS AVIATION P22

FORECAST ROB MORRIS LONDON

The demise of the duopoly

Our second of three articles on Ascend's vision for the global fleet looks at the effect of new entrants in narrowbodies

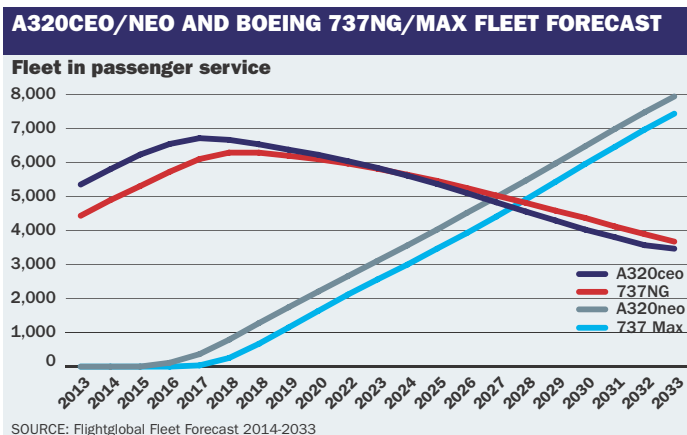
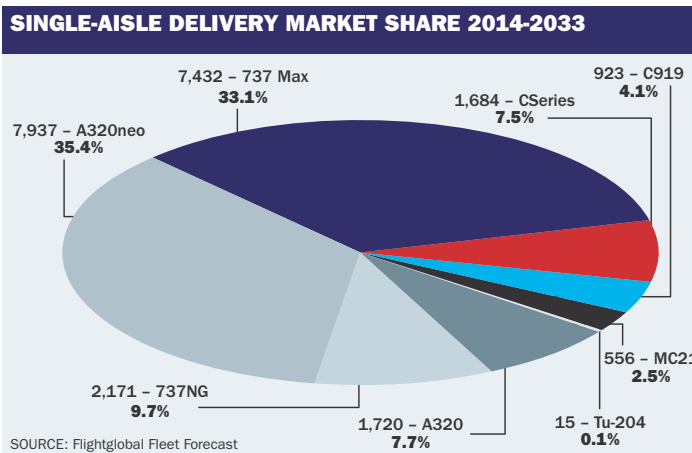
The single-aisle sector is the largest and most dynamic of the commercial aircraft markets. This year's Flightglobal Fleet Forecast predicts that narrowbodies will make up 58% of new passenger and freighter commercial aircraft deliveries to airlines over the next 20 years.

The 22,500 deliveries forecast by Flightglobal's Ascend consultancy arm are expected to be worth more than \$1,150 billion, in 2014 economic conditions. Although Airbus and Boeing dominate, they face a challenge from Bombardier, Comac and Irkut that have aspirations to capture a share of the market. This challenge has spurred Airbus and Boeing into action, and both are close to market with significantly improved derivatives of their A320 and 737NG families.

It is the re-engined A320neo and 737 Max that are expected to dominate deliveries in the sector, capturing close to 70% of deliveries between them. The forecast assumes the new derivatives remain in production through the whole period, although it also highlights the potential for an all-new next-generation single-aisle towards the end of the period.

The forecast predicts prices to remain broadly constant in real terms throughout the period – but in the event that fuel prices increase more rapidly than expected and engine technology can be developed and matured to offer further fuel burn improvements, demand from airlines for further efficiency improvements could result in the competitive scenario evolving more quickly than expected. However, the base scenario does not predict this to occur in the forecast timescale.

Although Airbus and Boeing are expected to retain market dominance, around 15% of total predicted deliveries are expected to be shared by Bombardier,



Comac and Irkut. Despite current development woes, we expect Bombardier's CSeries to capture a significant volume of sales once certification and initial deliveries have been achieved. With its established product support network and customer base, global

sales success is likely. The aircraft is also expected to achieve sales in the 125-seat sector, where its optimised economics are predicted to marginalise A319neo and 737 Max 7 variants. China's Comac and Russia's Irkut will see limited sales success. Although

their C919 and MC-21 offer economic and payload/range performance broadly competitive with the A320neo and 737 Max on paper, the challenge of overturning market incumbency is likely to limit these new producers' successes to home markets.

Around 19,000 passenger single-aisle aircraft are predicted to be in service in 10 years' time, with some 25,700 aircraft in service 10 years later. About 75% of the current fleet of single-aisles are forecast to be retired over the 20-year period, driving significant replacement demand in addition to fleet growth. Not all these aircraft will be permanently removed from service, with some 875 single-aisle passenger aircraft expected to be converted to freighters over the next 20 years.

Finally, Ascend is being asked about the impact of the new Airbus and Boeing variants on values of the current A320ceo and 737NG families. Although the A320neo is flying and deliveries should start next year, followed by the 737 Max two years later, the sheer size of the current A320ceo and 737NG fleet, plus further deliveries expected through the respective production transitions, should see the fleets of the current generation aircraft remain dominant in the market through 2027/28. ■

Rob Morris is head of consultancy at Ascend

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The report includes information such as predicted deliveries by the major manufacturers, an annual breakdown of new fleets and an in-depth commentary covering key industry drivers such as traffic growth, oil prices and aircraft financing.

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FUNDING KATE SANSFIELD LONDON

VisionAire 'won't give up' despite Vantage setback

VisionAire Jets' dogged pursuit of funding for its Vantage business aircraft has suffered a blow after an unnamed investor was incarcerated for fraud.

"They had promised to invest \$160 million in exchange for a 10% share in VisionAire, but the company turned out to be a sham," says VisionAire founder and chief executive Jim Rice. "These types of companies all too often prey on small start-up firms like ours. But we have been at it a long time, and we won't give up on the programme."

Rice has been a devotee of the single-engined entry-level Vantage since its inception around 26 years ago. "This is a unique aircraft. Since its launch nobody has brought anything like it to the market, and we are determined to see it through," he says.

Attracting investment for the Williams International FJ44-powered single-engined jet has always been a challenge, Rice conceded. When the money ran out in 2003, the company was forced into Chapter 7 liquidation. "Nobody was interested in funding an aircraft programme at that time, despite the fact we had a 155-strong orderbook and a proof-of-concept aircraft that had flown more than 500h," he says.

The subsequent owner, Eviation Jets, was also constrained by a funding shortfall, and sold the programme five years later to a resurrected VisionAire.

To date around \$170 million has been invested in the Vantage, and around the same again is needed to complete development and finally bring the aircraft to market. VisionAire is being supported for the time being, Rice adds, by a "group of local investors who want to see the programme succeed".

This capital has enabled engineering work on the Vantage to continue – albeit at a low-key level – at its Newton, North Carolina-headquarters. ■

ENHANCEMENT KATE SANSFIELD LONDON

Piaggio comforts Avanti II owners with interior retrofit

Cabin upgrade to offer "feel of a new aircraft", but will not cannibalise sales of EVO variant

Piaggio Aerospace is planning to launch an interior retrofit package for its P180 Avanti II early next year to give a new lease of life to the twin-engined turboprop, the first examples of which entered service in 2005.

The Italian company, a subsidiary of Abu Dhabi state investment arm Mubadala, has not yet released a price for the upgrade – dubbed the "Comfort Package".

However, the airframer says it will match the interior of its latest generation Avanti, the EVO, with VIP seats designed and manufactured by Iacobucci and finished by luxury outfitters Poltrona Frau.

Piaggio chief executive Carlo Logli says the upgrade will be available to the owners of the 128 Avanti IIs currently in service.

These customers already have the option of adding an extra fuel tank to boost the aircraft's range by 250nm (460km). "The new VIP interior will give the look and feel of a new aircraft," Logli says.



The VIP seats are designed and manufactured by Iacobucci

He dismisses suggestions that the retrofit could cannibalise EVO sales. "The latest Avanti is a major upgrade to the Avanti II, with its increased performance, quieter cabin, new propellers and landing gear, just some of the improvements we have made," Logli says.

Piaggio hopes to secure European approval for the \$7.4 million Evo during the Middle East Business Aviation show, which will take place from 8-10 Decem-

ber in Dubai. However, the airframer will not be bringing the aircraft to the event, Logli says, as it is committed to delivering the first two examples to their Indian and US owners before the end of the year.

Indian and US validation is expected to follow immediately after EASA approval.

"The EVO is selling well," Logli says. "We have 16 orders so far and 48 options." ■

DEVELOPMENT KATE SANSFIELD LONDON

Cirrus Vision for personal jet on track

Cirrus Aircraft is poised to fly its second production-conforming Vision SF50 personal jet within days, and is preparing the third and final test aircraft for its maiden flight by year-end.

"C1 has completed its engine run and we are getting it ready to fly," says executive vice-president and chief customer officer Todd Simmons. This aircraft will be dedicated to systems, icing and propulsion testing, while C2 will be used for functional and reliability testing.

C0 made its maiden flight in March and has since clocked up more than 220h of performance and handling testing in 150 flights.

This example will later be used to test the SF50's emergency parachute system, which is also fitted as standard on the airframer's SR piston single family and deploys in the case of loss of control.

"Certification is on track for next year and we are confident we can get the first batch of aircraft into customer hands in the fourth quarter," Simmons adds.

Reaching this milestone will mark an industry first, with the Williams International FJ33-powered SF50 becoming the only single-engined personal jet to enter service.

"This will be a major achievement for us," says Simmons. "We

have always been convinced that there is significant demand for this aircraft." His view is borne out by the size of the SF50 orderbook, which totals more than 500.

Cirrus will soon ask position holders to put down 10% of the aircraft's purchase price. "We want to know customers are committed to taking delivery when their slot becomes available. But we are not naïve; of course there will be third-party activity [from speculators,]" Simmons says. Cirrus plans to deliver about three of the \$1.96 million aircraft next year, ramping up to around 90 in 2016 and 125 in 2017. ■

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KATE SARSFIELD LONDON

The widely-held belief is that the Middle East has a thriving business aviation sector, largely kept aloft by vastly wealthy individuals and corporations that are almost entirely immune to wider economic woes. After all, petrodollars continue to gush out, despite the fall in the price of crude oil.

Of course, that is an overly simplistic analysis of the regional trends in business aviation. It may be home to the largest concentration of VIP airliners on the planet, but that does not mean the Middle East exists in glorious, moneyed isolation.

For instance, although much of the region shrugged off the effects of the downturn triggered by the 2008 financial crash, Dubai suffered its own economic crisis, culminating in holding company Dubai World restructuring its debts in 2010 as property investments went sour.

And as a recent survey by avionics and engines manufacturer Honeywell points out, the share of projected five-year global demand from the Middle East and Africa region has dropped below its historical range of 4-7% this year. Only 18% of operators are planning to make new aircraft purchases in the coming 12 months – down from 26% last year. Honeywell says the figures are “unsurprising” given that it has been “a year of significant political upheaval and ongoing conflict in the region” with the added burden of falling oil prices and the emergence of the Ebola crisis in Africa.

“Regional distress has taken a toll, with operators in the region scheduling their purchases later in the next five-year window than expected last year, with only 21% of purchases planned before 2017,” says Honeywell.

Nonetheless, the drivers that made business aviation such a steady market in the Middle East have not disappeared overnight.

POSITIVE OUTLOOK

“While some operators may have been persuaded in the early years of the downturn to delay their expansion plans to adjust to the unpredictability of the financial crisis, this uncertainty didn’t last long,” says Ali Al Naqbi, founding chairman of the Middle East Business Aviation Association, organiser of the biennial MEBA show. “Even the Arab Spring that swept through the countries of the Arab League between December 2010 and mid-2012 had little impact on business aircraft demand across the region,” he says.

According to MEBA, the Middle East and North African business aircraft fleet represents around 4% of the entire global inventory and, based on operator purchase plans, it says this share is likely to remain stable in the near term.



WHERE BIG JETS RULE

Despite a wobble in confidence as a result of regional upheavals, the Middle East remains a robust market for business aviation, particularly at the large end

Flightglobal’s Ascend Fleets database numbers the inventory of registered business jets and turboprops in the Middle East at 473, although that figure may understate the operational fleet as it does not include offshore-registered aircraft. And although there are VIP airliners in abundance, the majority of these, particularly the widebodies, are used by heads of state and a tier of wealthy businessmen.

What the Ascend fleet count also obscures is that the Middle East’s inventory is heavily weighted to the higher end. That the only VVIP Airbus A380 was due to be delivered into the region tells its own story (and that it still rests

at Toulouse after a change of ownership tells another). High-end aircraft from the likes of Gulfstream and Bombardier predominate.

Bombardier takes a bullish view on the region. In its latest industry forecast it predicts 1,095 business jet deliveries to the Middle East between 2014 and 2033 – an increase of around 7% year on year – driven by the continued global demand for oil and the investment by large businesses and wealthy individuals in other booming industries such as mining, agriculture, real estate and tourism.

This long-term positive outlook is good news for the region’s 40-plus business aircraft



Honeywell takes a bullish view of the region's prospects, predicting 1,095 jet deliveries between now and 2033

Royal Jet

operators and service providers, all jostling to carve out a greater slice of this lucrative yet increasingly competitive market.

"This is a great time for business aviation in the Middle East," says Mark Pierotti, chief operating officer of one of the region's largest VVIP aircraft operators, Al Jaber Aviation (AJA).

The company opened its doors four-and-a-half years ago at Abu Dhabi's Al Bateen executive airport and operates a fleet of five owned and managed business jets, including a 19-seat Airbus ACJ318 Elite and two 19-seat Embraer Lineage 1000s.

AJA's confidence in the long-term robustness of the Middle East's charter market is illustrated by its decision to add four ACJ319s to its managed fleet next year. Deliveries will begin in January with the remainder following at three-month intervals, says Pierotti. "These aircraft form part of our strategy to become a leading provider of international, long-haul, VIP charter," he says.

SOPHISTICATION

But AJA's ambitions are not confined to the VVIP charter market. This month it will launch the Middle East's first point-to-point branded air taxi service, Sky Limo. Pierotti stresses its distinction from the low-cost, no-frills air taxi operations proposed for the USA and Europe.

"The opportunity to launch this service came our way [in August] when a Hawker

800XP owner wanted to find a partner to do something with their aircraft," he says.

Sky Limo is targeted at executives who want to make short, regional hops without the expense of the larger-cabin, longer-range jets.

"Many senior executives are looking to make quick day trips around the region for business – Bahrain to Baghdad, or Kuwait to Istanbul for example – and this ad hoc, point-to-point service is simply not possible with the airlines," Pierotti says.

He suggests travellers have become sufficiently sophisticated to seek out the service – be that air taxi, charter or scheduled airline – that best fits their needs.

"With Sky Limo, there are no schedules. It fits around the customer's timetable. This is a great concept. Air taxi's time has finally come," he says.

AJA admits the launch costs for Sky Limo are high and the service is not expected to generate large profits for the company, with it being viewed almost as a loss-leader. "Not only does Sky Limo expand our service offering for existing customers, it should also help to attract new business by lowering the entry barrier to private aircraft travel," says Pierotti.

A second 800XP will join Sky Limo next year and AJA is also hoping to add managed Phenom 300s to the fleet as soon as the opportunity arises. "These high-performance business jets will get in and out of most airports in the Middle East," he says. "By the end of the decade we hope to have 10 aircraft – light and midsize business jets – in the Sky Limo inventory."

"I would also like to add the Beechcraft King Air 350 to our fleet, but I don't think the Middle East [VIP traveller] is ready for twin-engined turboprops just yet. First, they need to be educated about the benefits of these versatile aircraft," he says.

While its air taxi and VIP airliner charter/management offerings are core to AJA, the company is keen to broaden its portfolio. "Charter is simply not enough. You need multiple revenue streams to spread the risk," says Pierotti.

With this in mind, AJA is strengthening its maintenance, repair and overhaul (MRO) business. New hangars will be built at Al Bateen to enable it to provide base maintenance on a wider range of business aircraft. "We offer line maintenance now on Airbus and Embraer types, but we want to take on more heavy work and more aircraft models such as the BBJ," says Pierotti.

"Many senior executives are looking to make hops around the region for business"

MARK PIEROTTI

Chief operating officer, Al Jaber Aviation

Boeing's VIP single- and twin-aisle family accounts for nearly 20% of the Middle East-registered business jet fleet, according to Ascend, so it is not surprising the region is also home to the world's largest BBJ operator.

Abu Dhabi International airport-based Royal Jet – arguably AJA's biggest competitor – operates half a dozen Boeing types and has embarked on a \$700 million fleet upgrade programme for its VVIP charter business.

"We began operations 10 years ago and have been in profit for the last eight," says Patrick Gordon, who was appointed Royal Jet's chief executive in October, following the departure of Shane O'Hare.

The company announced plans last year to replace its BBJ fleet, and has been evaluating



NasJet

Saudi Arabia's NasJet, the region's largest private jet operator, has a fleet of 67 aircraft

» the Airbus ACJ319 and Bombardier CSeries alongside the latest BBJ family as possible platforms. The 10-year-old company has so far acquired two BBJs for delivery to as-yet unspecified completions centres in September and December next year.

Unlike his predecessor, however, Gordon does not want to replace the entire BBJ fleet.

"If the economy continues to grow and demand increases, I would refurbish the aircraft and keep them in the fleet. I hate to get rid of assets that could generate business," he says.

The BBJs are in good condition – since entry into service they have undergone "soft" refurbishments every two years and major refits every five.

FIRST EXAMPLE

Royal Jet is, however, replacing a pair of Gulfstream G300s it uses for charter and medical evacuation services and its Bombardier Learjet 60/XRs with larger Global 5000s. The first example was handed over last month and the second is scheduled to arrive in February.

In response to the growing demand for VIP charter, Royal Jet has begun to broaden its service offering. Late last year it joined forces with Air Seychelles – 40% owned by Abu Dhabi's Etihad Airways – to establish the country's first fixed base operation. The facility at Seychelles International airport is Royal Jet's only FBO outside its Abu Dhabi base. It is a response, Gordon says, to the growing number of private aviation tourists from the Middle East, Europe and the Commonwealth of Independent States visiting the island nation.

The success of the operation has persuaded Royal Jet to expand its FBO portfolio, but Gordon will not disclose which destinations the company is evaluating. "It will be in one of the [145] countries that we currently fly to," he says.

LEGISLATION KATE SARSFIELD LONDON

GETTING TO GRIPS WITH THE GREY MARKET

THE PERENNIAL issue of illegal or grey charter continues to infuriate established commercial operators around the Middle East. This practice – defined as when a private aircraft owner/ operator takes money for flying people when that owner and/or operator has no legal right to do so – is more active in the Middle East than in other parts of the world. Some estimates put the tally at between 20% and 40% of business aircraft flights at any given time, depending on the time of the year.

Ali Al Naqbi, founding chairman of the Middle East Business Aviation Association, says while there is no definitive number, "we all know it is very active in the region".

These practices, he argues, are putting commercial operators at a distinct disadvantage. "Private owners don't have the costly overheads associated

with their commercial counterparts so they can rent out their aircraft at a much lower rate than the licensed operators," Al Naqbi says.

"Not only do illegal flights create unfair competition and hinder the growth of legitimate operators, they invalidate insurance coverage."

ANATHEMA

For these legitimate operators, grey charter is an anathema.

"Don't call it grey charter. Call it the black market, because that is what it is," says Mark Pierotti, chief operating officer of Abu Dhabi-based VIP charter and management company Al Jaber Aviation.

Pierotti's disdain for the operators' flagrant disregard of the rules is evident. "They aren't hiding [their illegal activities]. They are flaunting it," he says. "We know who they are and where they are based. We

just need the teeth to stamp it out once and for all."

This widely-felt frustration is justified, because despite the rampant abuse, no aircraft have been impounded and no prosecutions have been lodged to date. This could be about to change, however. Jordan recently pledged to carry out unscheduled ramp checks at its airports and any aircraft found to be operating illegally will be impounded.

The aircraft and its owner/ operator would also be banned from Jordanian airspace, the country has promised.

"I am not a great believer in punishment, much more in education and persuasion," says Mohammad Amin Al-Quran, chief executive of Jordan's Civil Aviation Regulatory Commission. "But enough is enough."

For Patrick Gordon, chief executive of VIP charter opera-

The decision to move into aircraft and passenger handling was made seven years by fellow business aviation charter company Gama Aviation.

The UK-headquartered firm established operations in 2008 in the tiny emirate of Sharjah – next door to Dubai – and set about turning its airport-based facility into a major regional hub for private aviation.

"We began operations at the height of the global economic downturn," says Gama Aviation general manager for the Middle East Richard Lineveldt. "Right from the start we made sure that Sharjah – recognised then as a destination for cargo and low-cost carriers – was going to be a success."

Gama spent the first two years building relationships with potential customers and establishing its brand, which was hitherto unknown there. The hard work has paid off. Gama now has sales offices in Dubai and Jeddah and a recently-opened exclusive executive terminal at Sharjah, from where it is performing above its target for weekly movements.

Lineveldt says the closure of one of the two runways at Dubai International (DXB) in May was a boon to its Sharjah operation. "Business aircraft movements to DXB were heavily restricted so Sharjah became a natural choice for those travellers wanting to access the northern Emirates quickly and effectively," he says.

The company has now embarked on a six-month project to expand its hangar and maintenance provision at the site. It is also planning to grow its charter and management fleet with an increased focus on the buoyant Saudi Arabian and UAE markets.

"The business environment is favourable at the moment," says Lineveldt. "More companies »



Bahrain-based Comlux has a refurbished BBJ in its charter fleet that offers a private office

tor Royal Jet, such fighting talk is nothing new. He says unless radical measures are taken to address the problem, this practice will persist.

"I have been in corporate and VIP aviation for decades, and I have been hearing the legal charter operators complain about this issue for my entire career," says Gordon.

The most difficult grey market operators to identify, he suggests, are those who have an aircraft registered in one country, an air operator's certificate (AOC) from another country and operate from a base in a third country.

"The multiple layers of accountability and responsibility are extremely difficult to monitor thoroughly to ensure enforcement of regulatory issues," Gordon continues. "Such airplanes are like the tramp steamers that ply the world under flags of convenience, registered in countries that, too often, have no interest in anything but collecting the registration fees," he says.

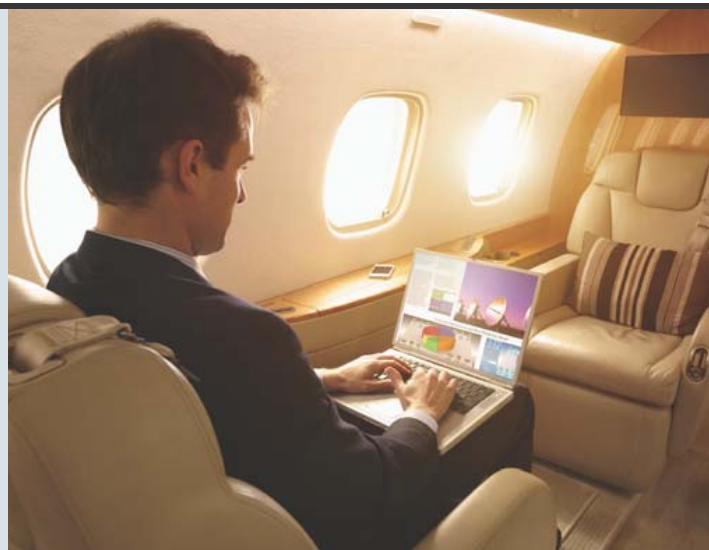
Gordon believes the most effective weapon in the fight against illegal operators is whistleblowing.

"In the Western world, whistleblowers have brought entire industries to their knees. Why not grey market chartering?" he asks.

"Investigations with the goal of prosecution would have to begin on the inside of the offending company. If [employees] are aware of illegal activities, they could begin a programme of collecting invoices, flight records and passenger lists and noting frequency of flights and specific passengers. This includes the time-honoured scam of invoices for so called 'demo flights'".

INCENTIVE

Gordon believes that given the risks involved, there would have to be a financial incentive for an employee to blow the whistle. "Absolutely nothing will be done about unscrupulous, grey market charter operators until their scams become financially beneficial to someone



Reef Features

Legitimate operators are infuriated by the illegal charter flights that are offered by private owners

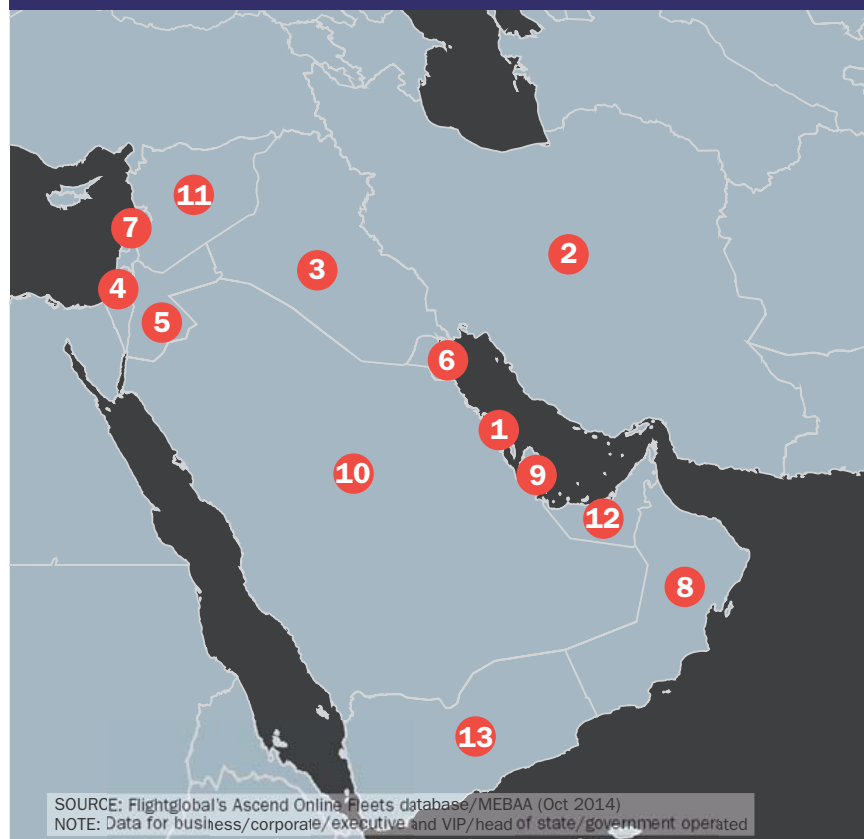
other than the seller and buyer of the product," he says.

MEBAA is hoping to clamp down on illegal charters by educating aircraft owners, operators and their customers on the pitfalls of the practice. It will unveil legislation at the MEBA show in Dubai, on which it has been collaborating with the

US General Aviation Manufacturers Association and regional civil aviation authorities for a couple of years.

The grey market is "a disaster for this region", Al Naqbi concedes, and stakeholders have a lot of work to do if the industry is to eventually win the fight against these operators. ■

MIDDLE EAST BUSINESS AIRCRAFT FLEET BREAKDOWN



SOURCE: Flightglobal's Ascend Online Fleets database/MEBAA (Oct 2014)
NOTE: Data for business/corporate/executive and VIP/head of state/government operated

Country	Sector	Fleet
1. Bahrain	Airliner Business jet	7 5
2. Iran	Airliner Business jet Turboprop	5 13 3
3. Iraq	Airliner Business jet	1 2
4. Israel	Business jet Turboprop	20 5
5. Jordan	Airliner Business jet Turboprop	3 10 1
6. Kuwait	Airliner Business jet	11 4
7. Lebanon	Airliner Business jet Turboprop	2 15 1
8. Oman	Airliner	7
9. Qatar	Airliner Business jet	12 14
10. Saudi Arabia	Airliner Business jet Turboprop	57 94 11
11. Syria	Airliner Business jet	4 2
12. United Arab Emirates	Airliner Business jet Turboprop	59 72 10
13. Yemen Republic	Airliner Business jet	2 1

» are being listed on the Dubai stock exchange, which means there is potentially an increase in charter and management opportunities there. Saudi also has huge potential,” he adds.

THRIVING ECONOMIES

Saudi Arabia is home to the largest registered business jet fleet in the Middle East and is considered to be one of the most promising markets within the Gulf Cooperation Council states. The kingdom is home to the Middle East’s largest private jet operator NasJet, which boasts a fleet of 67 owned and managed aircraft including an ultra-long-range Gulfstream G650.

NasJet is also the region’s only fractional ownership provider. The company launched the programme in 2007 with fractional pioneer NetJets. The partnership was dissolved

in 2010, however, following NasJet’s decision to go it alone.

Wael Al Sarhan, director of marketing for NasJet’s parent company NAS Holding says while aircraft purchases were delayed between 2008 and 2013, “at an operational level” the business was unaffected. “We were largely shielded by the [strong Saudi] economy,” he says. “The market is now growing fast. The numbers of aircraft owners [outright and fractional] is on the increase as high-net-worth individuals and corporations turn their backs on first-class airline travel in exchange for the more flexible private jet experience,” Al Sarhan says.

The thriving economies of the six GCC countries – Bahrain, Kuwait, Oman, Qatar, Saudi and the UAE – are helping to drive demand for business aviation, he says.

A recent study by investment bank Alpen

Capital endorses this view. It notes that although business aviation market in the GCC “is not at the same maturity as in the US or Europe, it has seen some traction in the recent past”. It points to the growth of the business aviation fleet in the six member states over the 2010-12 period, rising to 400 from 380 in 2010 – a compound annual growth rate of 2.6%.

“Going forward, the sector is likely to grow in view of high wealth concentration and healthy economic growth in the region,” it says. It predicts deliveries of around 1,200 business jets in the Middle East in the period to 2032, which, with retirements taken into account, will grow the fleet to around 1,420 aircraft by the end of the period – an annual average growth rate of 6.5%.

“With this, the business jet fleet per population of 100 million will rise to 407 from 158, during the projected period. Although Saudi Arabia accounts for a major proportion of the current demand for business aviation, other GCC countries, particularly the UAE and Qatar, are also expected to catch up.”

VITAL LINK

For Comlux’s vice-president charter sales and aircraft management, Claire Brugirard, the GCC’s strategic geographical location – eight flight hours from two-thirds of the world’s population – is a key factor in the success of this thriving region. “The Gulf is a key aviation hub – a vital link between the East and the West,” she says.

Comlux set up its base in Bahrain in 2010 and has seen its business go from strength to



Royal Jet has six BBJs and has begun a \$700 million upgrade of its VVIP charter fleet

FBO MURDO MORRISON DUBAI

DC AVIATION GOES IT ALONE AT DWC

IN THE dusty expanse of what may one day be the world’s biggest aviation gateway, the fixed-base operation of DC Aviation Al-Futtaim stands in virtual splendid isolation next to the runway. The joint venture between the German charter operator and local conglomerate is one of just a handful of buildings at Dubai’s new Al Maktoum airport. Beyond it, to the horizon, the envisioned Dubai World Central mega-development that will envelop the airport remains scrubby, flat desert.

That is not to say activity is scarce at the FBO, which in November marked its first birthday. Business, says general manager Holger Ostheimer, has got off to a flying start, as more operators and owners – fed up with delays at the increasingly busy Dubai International airport – choose

Al Maktoum, known by its airport code DWC. “In the last quarter especially we’ve seen a significant move of traffic to DWC,” he says. “It is becoming a definite trend.”

COMPETITIVE

DC Aviation does not have Al Maktoum quite to itself. Maintenance and aircraft management rivals ExecuJet and Jet Aviation both have a presence in the VIP section of the small passenger terminal, along with flight support provider Jetex. But DC Aviation is the only brand with a fully-fledged base, which comprises a large and luxurious VIP lounge and crew area, offices, a maintenance hangar and an apron – on which, when we visited, four jets were parked.

DC’s main activities at the moment are providing terminal and

parking facilities, together with aircraft maintenance – it employs 10 technicians and has approvals for the Bombardier Global Express and Challenger family, the Airbus A320

DC Aviation has a base comprising a luxurious VIP lounge, offices, maintenance hangar and an apron

and the Gulfstream G450 and G550. DC had hoped to announce at MEBA the launch of its own air operator’s certificate and, with it, a managed aircraft and charter business, but paperwork has snarled that until the end of the year.

Once it has its AoC, Ostheimer is convinced DC can build up a sub-

stantial fleet of managed aircraft, but he acknowledges that the Middle East is a competitive market. Alongside industry leaders ExecuJet and Jet Aviation – which have large FBOs at Dubai International – and Gama, which has its operation at nearby Sharjah, there is a host of smaller, locally-owned enterprises offering to run and hire out aircraft on behalf of wealthy owners.

Ostheimer believes the reputation of DC Aviation in the European charter market – the Stuttgart-based former DaimlerChrysler fleet department manages around 25 jets for third parties – and that of 51% owner Al-Futtaim, a heavy-weight corporation with interests in construction, property and car distributorships, give it a big point of difference over rivals.

strength. The Swiss-headquartered company operates three VIP airliners – a Boeing 767 that was refurbished in 2013, an Airbus ACJ320 and an ACJ319 – and a super-midsized Embraer Legacy 650 used for shorter hops.

Brugirard argues that while demand has remained stable since its operations began four years ago, the nature of the market has changed. “In 2010 everything was user driven and revenues from pure charter services were high. Today, our business is more focused on the ownership model and we have adapted our business accordingly,” she says.

Comlux now offers a “one-stop shop” for owners – from buying the aircraft through to completing, maintaining and managing the asset. This is a great way to increase the fleet without the huge financial outlay, it says.

“The Middle East is a very important market for Comlux and there are a lot of opportunities for us here in the short, medium and long term,” says Brugirard.

To reflect its growing importance, Comlux is strengthening its fleet and reinforcing its regional sales team. “We want to add around three aircraft to the inventory – a midsize, long-range and airliner-size model – but we don’t want to get too big. In this increasingly competitive market, a high standard of service is vital if you want to differentiate yourself from your rivals.”

This sanguine outlook for the Middle East, particularly the UAE, is supported by Captain Mahmoud Ismael, chief operating officer of the region’s largest helicopter operator, Falcon Aviation Services (FAS).



Al Jazeera Aviation is launching its point-to-point Sky Limo air taxi with a Hawker 800XP

“There is a sharp focus on business aviation in the UAE,” he says. “The [governments] continue to work hard to develop the infrastructure to allow this industry to grow.”

He cites as an example of this dedication, the \$32 billion investment in the Dubai World Central aerotropolis. DWC is home to Al Maktoum International airport and will eventually include a dedicated private aviation terminal.

“This substantial commitment to business aviation coupled with the positive long-term outlook for the industry [in the Middle East], has convinced us that the time is right to put our growth strategy into action,” says Ismael. These plans include the Middle East’s first VIP completions centre.

“The Gulf is a key aviation hub – a vital link between the East and the West”

CLAIRE BRUGIRARD

VP charter sales and aircraft management, Comlux

Abu Dhabi-based FAS – which has a fleet of nearly 30 rotary- and fixed-wing aircraft – plans to break ground on the DWC-based facility at MEBA and expects to be open for business in early 2016. The first completions project is scheduled to be a VIP-configured Bombardier CS300.

The company became the first UAE-based customer for the in-development regional airliner, when it placed an order for two of the type earlier this year.

“This region is home to a large and expanding population of business aircraft,” says Ismael. “Currently [local] owners are obliged to go Europe or the USA in order to get their aircraft completed or refurbished. But in 2016 they will be able to get this work done locally.”

Eight-year-old FAS already provides MRO services and has approvals from a number of airframers, including Embraer and Airbus Helicopters. “This is a natural expansion for our thriving MRO business,” Ismael notes. “We are also keen to add to our list of aircraft approvals.” ■

DC, he insists, is a “premier service provider, although one that is competitive with other brands”.

The company will launch its aircraft management operation with a single Global Express. But already, says Ostheimer, “negotiations are taking place with owners to transfer aircraft to us. We won’t be sitting on one aircraft for long.” DC’s “high operating standards”, he says, extend to exemplary training for pilots and cabin crew, essential when owners – who may fly their aircraft just 300h a year – need a team they can rely on to be available, efficient and discreet.

While no passengers want to spend longer in an airport lounge than they have to – even one as well-appointed as DC’s – Ostheimer is convinced investing in a high-end facility pays off.



Ostheimer: premier service

“That type of clientele have a high level of expectation in all aspects of their life,” he says. “They appreciate style and class. It’s important to create the right impression and link it

with the brand. And if delays should happen, you have a place where they will be happy to wait until their flight is ready to leave.”

PERCEPTION

For years, the Dubai government and landlord Dubai Airports have been trying to entice business aviation operators out of Dubai International, as slots become increasingly scarce with the growth of Emirates Airline and the economy. The problem is – despite the potential for hold-ups – the hub on the edge of Dubai’s downtown remains a bigger draw than the rather remote DWC – 40min away beyond the far edge of the city when freeways are clear.

This perception, however, is changing, believes Ostheimer, as business aviation gets pushed further down the priorities at Dubai International.

“A typical trip for most local business people will involve a morning flight somewhere, with a return home late in the evening after dinner. The trouble is when pilots request a slot for 11.30pm, they might be offered 2.30am,” he says. “The sort of people who own business jets just do not tolerate disruption like that.”

In addition, while DWC may not be handy for Dubai’s government offices and finance district, it is less of a drive to the “new-money” areas of Dubai Marina, Jumeirah and the city’s latest upscale housing developments. Ostheimer believes market forces will see him being joined at the new airport by more competitors before too long, although he is relieved by the fact that from his second floor corner office window “I can’t see any construction going on just yet”. ■

HIRE PRINCIPLES

Around half a million new pilots will be needed over the next ten years as the airline industry expands around the world. Where are the main opportunities for those with their eye on a new career?

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EUROPE

Low-cost leads way

No-frills carriers are among the biggest recruiters in the region, although full-service Virgin and BA are also seeking new talent

KEN WALKER LONDON

When it comes to airline pilot recruitment, “we’ve got a perfect storm brewing”, reckons Anthony Petteford, chief commercial officer of CTC Aviation – one of the largest European trainers of future flightdeck occupants.

An estimated 500,000 new pilots will be needed over the coming decade, he says, due to the requirement to replace 150,000 current personnel reaching retirement age, and to find a further 350,000 to cope with the industry’s global expansion.

These huge numbers are looming at a time when factors are conspiring to reduce the volume of new entrants to the industry.

“Since 9/11, the moment of epiphany where young people are inspired has been denied to them by not being allowed on to flightdecks. That’s reduced the number of aspiring pilots. The increase in costs to qualify as a pilot has also constrained the ability to enter the profession,” he says.

Additionally, the increasing automation of aircraft is, in the eyes of potential young recruits, downgrading the status and desirability of life behind the control yoke or beside the sidestick. The lack of time spent actually flying many modern airliners is reducing the status of pilots to that of an operative, not a professional, many believe.

“They gain the impression that the job is simply no longer what it once was,” says Petteford.

His concerns notwithstanding, airlines to which *Flight International* spoke say they are not currently experiencing a shortage of applicants, despite demand for pilots being strong.

Unsurprisingly, some of the biggest recruiters are fast expanding low-cost carriers. Norwegian has recruited around 400 pilots for its short- and long-haul divisions this year, and expects to take another 250 in 2015. Wizz Air will take “up to 200” next year and Ryanair, in its next financial year that starts in April, will hire at least 600 new first officers undertaking type-rating training.

Different airlines have different preferences when it comes to bringing in new pilots. Wizz Air prefers to recruit experienced first officers, who typically get a captaincy in four to five years. “At Wizz Air we believe in promoting



(From left to right) Ryanair and EasyJet are behind much of the recruitment of pilots in Europe; Lion Air is one of Asia’s fastest-growing airlines; Emirates is one of the trio of Gulf airlines that need to fill flightdecks fast to meet ambitious fleet expansion strategies

» internal competence,” says chief pilot Capt David Morgan. “Our captain upgrade programme is much appreciated by our pilots, many of whom used it to step up their careers at Wizz; therefore we prefer to recruit experienced first officers.”

Norwegian says it recruits a mix of experienced captains and first officers, but also young pilots for type-rating courses. Accordingly, the Scandinavian airline provides a mix of training. It undertakes type-rating courses for the Boeing 737 and 787 and also handles an operators’ conversion course for experienced pilots.

HIGH FLYERS

All Virgin Atlantic’s new pilots – apart from its new Future Flyers Programme trainees – join as first officers with a minimum of 3,000h, including 1,000h on commercial jets. Thomson Airways accepts only pilots with the appropriate type ratings.

EasyJet’s head of flight operations, Brian Tyrrell, says the last advertisement the London Luton-based carrier placed for experienced first officers attracted 3,500 responses. However, a Virgin Atlantic spokeswoman cautions: “With the decreasing number of airlines in the UK and reductions in armed forces pilot training, we do expect that in the long term [recruitment] will become more challenging.”

One common factor reported by airlines is that virtually all younger pilots accepted for training go on to pass the tests. This is mainly down to increasingly tough initial screening and aptitude tests that weed out marginal candidates early in the process.

One gateway to the flightdeck – airlines’ sponsored cadet schemes – was largely closed off in the recession that followed 9/11, as carriers tightened their belts.

In October, Virgin Atlantic announced it was resurrecting this entry method with its Future Flyers Programme (FFP), run in partnership with CTC Aviation.

The numbers involved in the FFP are small – just 12 in 2015, the first year of a five-year contract with CTC.

However, the programme not only offers the possibility of school leavers being granted entry into the profession, but also does so with the airline prepared to provide a financial guarantee for those with talent, but who are unable to afford the £109,000 (\$171,000) it takes to go from ab initio training to the position of qualified first officer on Virgin’s Airbus A330 fleet.

“Virgin are saying your financial or social background shouldn’t be a limiting factor,” says CTC’s Petteford. “They’re enabling diversity.”

Additionally, the flying training runs in tandem with a newly created three-year degree course run by CTC and Middlesex

Apart from trainees, Virgin Atlantic’s new pilots join as first officers with a minimum of 3,000h



Over the next four years EasyJet is looking to recruit 700 captains and 1,500 co-pilots

“Virgin are saying your financial or social background shouldn’t be a limiting factor”

ANTHONY PETTEFORD

Chief commercial officer, CTC Aviation

University that will see successful candidates emerge with a BSc in ‘professional aviation pilot practice’.

The flight training syllabus consists of six months in ground school, followed by a core skills course on Diamond DA40s in Phoenix, Arizona. Students then return to the UK for simulator training covering instrument and multi-engine flying skills.

Around 3h of upset prevention recovery training is taught in an aerobatic aircraft, plus 4h in the simulator, then further sessions in the simulator add more detailed, Airbus-specific skills.

The final phase is taught at Virgin’s base near Gatwick and is more akin to traditional type-rating training. Trainees move on to the A330 and, ultimately, line operating experience alongside a line-training captain. A multi-crew pilot licence is the ultimate prize.

The Virgin Atlantic scheme, while welcome in providing berths for youngsters unable to raise the substantial funding required today to become a pilot, is relatively small compared with British Airways’ cadet scheme, the Future Pilot Programme.



Norwegian brought around 400 pilots into its short- and long-haul divisions this year

“With Monarch and others I think we’ll bring in about 50 experienced captains”

BRIAN TYRRELL

Head of flight operations, EasyJet

wouldn’t be able to get into an aircraft,” says Craig. “We don’t want to see talented people stuck on the outside.”

With this in mind, every successful applicant can apply to BBVA, BA’s Spanish partner bank, for funding for their training costs. “They apply for a loan that’s guaranteed by BA. That effectively removes a huge barrier,” says Craig. The trainees normally pay back the money over a 10-year period, after an initial two-year payment holiday.

BA operates two other recruiting streams. Although the flow of ex-military pilots in many Western countries has slowed to a relative trickle as armed forces have shrunk since the Cold War, they are still appreciated by airlines for their skills and discipline.

MILITARY MOVERS

Virgin Atlantic, for example, has taken 10 pilots from military heavy jets this year and funded type-ratings for them – as it is prepared to do if it finds particularly suitable civilian candidates. Around one-third of Virgin pilots are ex-military.

BA tries to smooth the transition from the military to civil sector by liaising with the British armed forces and arranging for pilots within two years of the end of their military careers to visit the airline. Both sides have a chance to evaluate whether they are right for each other.

Under this Managed Paths programme, military pilots can go through the BA selection process while still in uniform. Assuming they pass, BA will offer them a full civil type rating on the fleet they hope to join.

Finally, BA also offers direct entry for pilots transferring from other airlines. If a carrier

is retrenching, “we can expect a spike in applications”, says Craig.

BA recently offered jobs to “quite a significant number” of pilots from UK-based Monarch Airlines, which is shrinking and moving from charter and long-haul services to a scheduled low-cost carrier niche.

“In the past six months,” adds Craig, “we’ve had around 2,000 applications from qualified pilots wanting to join BA.

“If someone joins BA with the appropriate type rating, they go through around a month of learning BA procedures before getting on to the flightdeck. If they lack the relevant type rating, the process is two to three months.”

Acquiring pilots from a wide variety of backgrounds is deemed to be increasingly important by airlines.

EasyJet, for example, likes to bring in pilots experienced in other sectors, such as freight and turboprops. “They’re different,” says EasyJet’s Tyrrell. “Not better, but different. That’s useful. We find they have a different perspective, which helps the business.”

EasyJet is also prepared to help out financially, at least in some cases. If it selects pilots who have existing loans from banks or parents, “we bring those loans ‘in-house’, so we can guarantee them”. The carrier is also prepared to put in place funding arrangements for trainees who “show great potential”.

The airline is also prepared to recruit tactically when opportunities arise as other airlines retrench, adds Tyrrell: “With Monarch and others I think we’ll bring in about 50 experienced captains to the business.”

They will be needed: over the next four years EasyJet is looking to recruit 700 captains and 1,500 co-pilots – all to cope with expansion. “Our attrition is tiny. We’re a very secure airline. With our expansion rates, it’s about five years to get your command. Doing so aged 27 or 28 is really quite normal.”

Four to five years is mentioned by several airlines as the typical timeframe before a pilot moves into the left-hand seat, although Norwegian says an experienced first officer

Since the programme was reinstated in 2011 after a decade-long hiatus, around 220 trainees have been selected, with the first tranche of just over 90 due to start taking up their places on BA’s single-aisle Airbus fleet in the coming months.

“It’s pretty popular,” says Lindsay Craig, BA’s manager, pilot recruitment. “We normally run one application window per year and get 4,000-5,000 applicants each time.”

Initial training takes place at CTC Southampton or CAE Oxford Aviation Academy in the UK, or FTE Jerez, Spain, from where trainees graduate with a ‘frozen’ airline transport pilot’s licence. They are then introduced to multi-crew theory, learning skills such as sharing workloads.

Success rates, says Craig, are in the “high 90%” range, thanks to what he calls a “pretty gruelling” initial selection course. “We don’t want anyone to go into training who isn’t going to be successful.”

As with Virgin’s scheme, the rationale behind BA’s training course is to spread its recruitment net wider than has been the case in recent years.

Industry observers are concerned that graduates coming into the industry are increasingly being drawn from a narrow social stratum, whose parents have the funds to bankroll their offspring through training.

“The whole point of the FPP was to stimulate applications from people who otherwise

» might only have to wait about 12 months: “Our requirement is minimum 4,000 hours with 2,000 hours on the Boeing 737.” At the other end of the spectrum, the typical time to command for young pilots at Virgin Atlantic is 10.5 years.

In recent years, the exponential growth of Middle Eastern carriers has seen them attracting thousands of pilots to the Gulf. However, none of the airlines contacted by *Flight International* say they are experiencing much, if any, drain of personnel to that region.

Peter Bellew, Ryanair’s director of flight operations, says the number departing for sunnier climes can be 20-30 in some years, but none in others: “We would have budgeted for a certain number of people to leave and we’re behind that budget.” In fact, he adds: “We’ve had people coming back from the Gulf.”

That latter phenomenon has also been reported by Virgin Atlantic, which says Middle Eastern carriers have actually been the airline’s largest single source of pilots joining it over the last two years.

RAMP UP

Ryanair, which next year will start to accept significant numbers of its order for 185 Boeing 737-800s, is gearing up its training system to cope with this influx of equipment.

For pilots who require type rating on the Boeing, the carrier charges applicants €28,500 (\$35,400), but it says this is seemingly not a deterrent, based on the number of job applications it receives. The length of its line training sessions “are double anyone else’s”, Bellew claims.

“Ryanair has come to be seen in the industry as the safe haven for pilots,” he says. “We never let people go. We have no problem in recruiting experienced captains.” He adds that recruits to Ryanair contain a significant number of people making career changes. “We have everything from dentists to artists to post-graduate mathematicians [and] plumbers... even priests.”

As Ryanair’s fleet ramps up it anticipates internally promoting some 220 captains and hiring another 100 externally.

Not all airlines are finding it so easy to recruit, however. Russia has just passed legislation allowing foreign pilots to fly for Aeroflot. Its first non-Russian captain, Klaus Rohlf, a German citizen, made his maiden command flight for Aeroflot in late September.

Russia’s flag carrier says it sees recruitment of foreign pilots as “an essential transitional measure to help reduce Russia’s current deficit of flight personnel, which will require concerted long-term efforts”. It says it received 800 foreign applications – more than 10 for every vacancy – with most candidates coming from nations such as Spain and Italy, where airlines have been retrenching. ■

ASIA

East meets the West

For an expat, working in parts of Asia can bring challenges, but growing airlines are ready to offer attractive packages for pilots

GREG WALDRON SINGAPORE

The Jakarta headquarters of Indonesian low-cost carrier Lion Air has a definite buzz. Formerly the headquarters of a bank, the frenetic ground floor features dozens of counters where travellers pay cash for tickets.

In the offices above, where the carrier’s various departments are located, the atmosphere is a bit more sedate – but the sense of a growing, prospering company is palpable. This includes the company’s sixth floor operations centre, where young expatriate pilots are not an uncommon sight.

Working in Asia is either a blessing or a bane for a pilot. For a young single pilot with a sense of adventure, few parts of the world are more alluring. For older, married pilots the situation is somewhat different. Trailing

spouses may find it difficult to adjust to life in a foreign city, and may have a hard time getting a job. The kids can also be a problem – spots in quality international schools in the Asia-Pacific can be harder to come by than peak hour slots at London Heathrow.

Irrespective of the pros and cons of living in Asia, however, the airlines in this part of the world need pilots and first officers to keep growing. The demand stems from the Asia-Pacific’s booming air travel sector, and the swollen backlogs of both narrowbody and widebody jets in the region. In any given month about 50% of Airbus and Boeing’s deliveries go to the Asia-Pacific – half of which go to China. These aircraft need pilots.

It is these raw numbers that lie behind Boeing’s forecasts of demand for pilots and technicians in the two decades to 2033. The US airframer predicts that the Asia-Pacific will require 216,000 pilots in the next 20 years – 41% of global demand. This compares with 94,000 (18%) from Europe and 88,000 (17%) from North America.

“Chinese carriers are not asking for young pilots, but very experienced captains

CAPT BOB COFFMAN

Chairman, APA government affairs committee



Cathay Pacific aims to recruit 250 pilots to fly types such as the 747-8F

"Airlines across the globe are expanding their fleets and flight schedules to meet surging aviation demand in emerging markets," says Boeing. "The industry continues to consider how to address challenges and fill the future pilot pipeline."

VAST ORDERS

Bob Bellitto, director, customer group at Boeing Flight Services says demand for pilots in the region is growing, mainly owing to the vast aircraft orders placed by Asia-Pacific carriers. He acknowledges concerns about a pilot shortage, but feels this actually offers an opportunity for aspiring young people to enter the profession.

"There is potential for a pilot shortage," says Bellitto. "The way you'll find out when there is a shortage is when pilots' pay goes up. When there is a shortage, pilots' pay will go up, flight attendants' pay will go up and we'll all pay more for tickets."

The link to the jobs list on Flightglobal.com shows a number of opportunities in the region, with jobs at carriers as diverse as Shenzhen Airlines, China Eastern Airlines, Spring Airlines, Skymark Airlines, Korean Air, Vietnam Airlines, Air Japan and several others. There is demand for crew on a range of types, from Airbus A320s and Boeing 737s to widebodies.



Airlines are developing domestic talent

"We have seen an increased demand for pilots across [the] Asia-Pacific," says Mark East, managing director of Rishworth Aviation, a recruitment firm specialising in pilots. "The countries that Rishworth has experienced a higher demand for in recent years include Vietnam, Indonesia, China, Taiwan and Korea."

East offers several points of advice to pilots contemplating a move to Asia. He says it is crucial for a pilot coming into the region to adapt his new employers' way of doing things, and that a willingness to embrace change is important. He also suggests reaching out to pilots who have made the jump.

"There are thousands of pilots flying in airlines outside their home country. If you are interested in working a different country the best thing is to talk to other pilots who have already done this and learn about their experience," East says.

He adds that packages tend to be very competitive in the region, but pilots should consider the cost of living in their new home before making the move. Singapore and Japan, for example, are among the most expensive countries in the world, while the cost of living in countries such as the Philippines, Vietnam and Indonesia is very low. Moreover, pilots paid in US dollars have benefited from the strong rise in the currency this year.

The flip side of this, however, is that the cost of employing foreign pilots gives Asian carriers a powerful incentive to develop their own talent base. Of Vietnam Airlines' 900 pilots, 300 are foreigners. Through investment in training at home, the carrier hopes to gradually increase the number of Vietnamese captains.

"The Vietnam Airlines flight training centre has modern equipment and good infra-

structure to facilitate training, education and accumulation of flight experience," says a company spokesman. "We want to domesticise training and recruitment to create jobs for Vietnamese. Moreover, increased domestication in pilot training helps cut costs and gives the carrier a firm base for long-term development." The spokesman adds that prior to 2010 Vietnam Airlines pilots had to go abroad for training. Only a portion of the training occurred in Vietnam at Viet Flight Training JSC (VFT).

"Thanks to the success of technology transfer and shifting a part of training into Vietnam, VFT has helped shorten the basic pilot training abroad from 18 months to 10 months, saving 15% on training cost."

GLOBALLY COMPETITIVE

Indonesia's Lion Air also wants to become self-sufficient in pilots. The low-cost carrier now requires 100-150 pilots annually, divided roughly between captains and first officers, with experience in A320s, 737s and ATR 72s.

"Local pilots will get the first spots, while foreign pilots will make up the balance. But the overall number could be skewed toward foreign pilots," Lion Air's operations director Capt Theodore Midigdo says.

While a major employer of foreign staff, Lion has taken a number of steps in recent years to create its own talent pipeline. The carrier's Angkasa Aviation Academy opened its second campus in 2013, which aims to produce about 150-160 graduates annually. Lion also ordered four A320 simulators from CAE in late 2013.

Moreover, some Asian carriers tend to require flightcrew with more experience – specifically captains. This is especially true of China. This is a trend observed by Capt Bob Coffman, chairman of the government affairs committee at the Allied Pilots Association in the USA.

"Chinese carriers are not asking for young pilots," he says. "They are asking for very experienced captains with thousands of hours and type ratings in the appropriate aircraft. These qualified candidates are hired directly into the left seat at globally competitive salaries. We are not, in general, seeing an exodus of young pilots for overseas jobs."

Perhaps the biggest drawback for any American pilot taking a job in China is the strict seniority system employed by US airlines – and, indeed, a number of Western carriers. Any experienced US captain returning from a stint of China will find himself again at the bottom of the seniority ladder, should he go home.

Still, Coffman feels special circumstances could make a job in Asia attractive. Well-qualified pilots from failed carriers, skilled first officers with left seat experience and





Lion Air needs up to 150 pilots a year

pilots with stagnant carriers could find a job overseas to be highly enticing. He notes he had several friends at failed Hungarian carrier Malév who ended up heading to jobs in Asia.

Hong Kong's Cathay Pacific Airways, however, is always on the hunt for a range of pilots – both with experience and newcomers to the industry. A company spokesman says the carrier aims to recruit more than 250 pilots annually.

Its global second officer programme searches for pilots worldwide. Applicants need a minimum of an airline transport pilot licence or a commercial pilot licence, in addition to flying experience. Cathay says it also continues to recruit candidates with “little or no aviation experience” for its 55-week cadet pilot training programme.

“The aviation industry is a competitive market,” says a Cathay spokesman. “Being a leader in the industry, Cathay Pacific offers a competitive remuneration package, international exposure, timely career progression and the opportunity to operate state-of-the-art widebody aircraft that attract candidates to apply.”

Fast-growing economies, the rising Asian middle class and aggressive airlines with rapidly growing fleets ensure that pilot demand in the Asia-Pacific will continue to be strong for both local and foreign pilots. The key for foreign pilots in the region is finding the right country and right carrier, and then making the sacrifices necessary for a successful Asian foray. ■

MIDDLE EAST

Gulf keeps growing

The region's three big global connectors are set to continue to lure expat pilots from around the world as their fleet sizes ramp up

MURDO MORRISON DUBAI

For years now, the Gulf has been the go-to region for ambitious pilots looking for a fast-track to the left-hand seat with a growing and profitable airline, flying international routes on new equipment, coupled with a comfortable benefits package and lifestyle.

The region's big three airlines – Emirates, Etihad and Qatar Airways – have had their pick of the world's aviators, turning down as many applicants as they take on. This year, more than 1,000 pilots will join the three airlines alone.

Visit Dubai and you wonder what is not to like. The rapidly-expanding regional economic hub of gleaming skyscrapers and opulent coastal villas has something for everyone – expat resident or tourist alike – combining a safe environment with a lively entertainment, retail and leisure scene. The downside is the cost and shortage of housing, but Emirates says it mitigates this by offering company-provided accommodation or a living allowance.

Abu Dhabi and Doha, the more sedate bases of Etihad and Qatar Airways respectively – and both national capitals – may not have the 24/7 buzz of their fun-loving neighbour, but they are each shaking off their backwater image with investment in luxury hotels, entertainment and sporting venues, housing developments and apartment blocks. Like Emirates, both airlines stress the benefits of making a new home in the city as much as the job itself.



Emirates will recruit around 400 pilots next year – roughly the same as 2014 – as it takes delivery of 16 Airbus A380s and 13 Boeing 777s. Although some A330s, A340s and older 777s will be retired and crews retrained for newer types, the intake will see overall pilot numbers increase by a tenth. With a low annual retirement rate – because its pilots tend to be younger – Emirates' flightdeck attrition rate is just 2%, says divisional senior vice president of flight operations Capt Alan Stealey.

INTERNAL PROMOTION

Despite a blip three years ago when it urgently needed experienced direct-entry captains, the Dubai airline sticks to its policy of only recruiting first officers. While this might mean experienced captains have to return to second-in-command for a while, Stealey insists it is the best way for Emirates to instill the airline's values in all flightcrew, and ensure opportunities for rising in rank apply equally. “We prefer to promote internally and early,” he says.

This means that all first officers have a chance to apply for captains' positions after a minimum of three years with the carrier, although a four-and-half year wait is typical, says Stealey. Given that Emirates stresses the long-term nature of a career with the airline, this is not an unreasonable period, he suggests. It is also much shorter than most legacy carriers, where stagnant fleet sizes and strict seniority rules mean co-pilots “might have to spend 20 years in the right-hand seat”.

To apply for a job at Emirates, pilots need at least 4,000 flying hours in total in a commercial aircraft, or 2,500 on either an Airbus or Boeing. Those from a low-cost carrier background – who will fly around 800h a year – often get there fastest, and many applicants come from this sector, says Stealey. For a pilot flying several short-hop sectors a day, the



The region's carriers are seeking to recruit both experienced and inexperienced crew



Emirates recruits its A380 pilots from within its Airbus fleet

attraction of intercontinental routes and really seeing the world can be compelling, he adds.

But Emirates also gets applications from much more seasoned pilots. “We had a guy in yesterday with 8,000h of experience,” he says. In fact, Stealey maintains he is seeing a change in the sort of pilots coming to Emirates. For a while crisis-hit US airlines were a happy hunting ground, but now, as the North American market has picked up, Europe’s ailing carriers are providing a stream of recruits, says Stealey. “If you work for an airline that is downsizing, we can offer stability,” he adds.

Emirates – which operates an all-widebody fleet – rarely mixes its Airbus and Boeing pilots, preferring to recruit its A380 crews, for example, from its own A330 cohort or external Airbus pilots. “The philosophies are different and we find it works better to retain pilots within the manufacturer,” says Stealey.

Similarly, for its growing 777 fleet, Emirates will tend to take on pilots experienced in flying Boeings. Type training is carried out at its own facility in Dubai or overseas.

Emirates is proud of its multinational flight-decks – with over 80 nationalities represented at last count – and puts a great emphasis on cultural understanding in its training. Having the right personality is as important as having the skills, says Stealey. About half the applicants to Emirates are rejected. “We’re not afraid to say to someone we won’t take you,” he says.

Every foreign pilot who applies to Emirates is encouraged to travel to Dubai for the interview, “and bring their family too, so they can see the city”, says Stealey. Although pilots are occasionally permitted to be based overseas, the vast majority are based in Dubai, where Stealey says the reward package – covering accommodation, children’s education, medical insurance, all in an income tax-free environment – is highly attractive.

In Abu Dhabi, Etihad has been even more prolific in its recruitment, taking on 650 first officers and direct-entry captains this year to crew the 24 airliners it will have taken delivery of in 2014, and 18 more that will join the fleet over the next 12 months – as well as backfilling internal promotions. The growth of the UAE flag-carrier, which was set up just over a decade ago, has been rapid, and its current spurt has meant it has had to relax its policy of only recruiting first officers.

VETERAN COMMANDERS

“Our rate of expansion has been very fast and we have had to try to balance experience in the flight deck,” says chief operations officer Capt Richard Hill. “At times like this, type specific experience is not as critical as experience in global operations.”

Many of these veteran commanders have come from Asian carriers such as Singapore Airlines and Cathay Pacific, which have been “downsizing expat captains”, particularly on their Boeing freighter fleets, says Hill.

Another imbalance that has to be tackled is the large number of cadet pilots coming through the ranks. State-owned Etihad has been emphatic about offering cockpit careers

for young Emiratis, although it has also extended the net to international students. Some 70 former ab initio cadets – including 20 non-Emiratis – will graduate as second officers next year. However, they will take at least seven years before they reach the 5,000 flight hours that they will require to be considered for a command.

Direct-entry first officers must have a minimum of 1,500h cockpit experience and will typically take three-and-a-half to five years to reach the left-hand seat. Many recruits come from Airbus and Boeing narrowbody operators, but several have been piloting regional jets. “We are fairly pragmatic about that,” says Hill. “Our main requirement is that they have experience in a multicrew environment in a glass-cockpit type.”

A rich seam of recruits has been provided by Etihad’s partner airlines – those it has taken shareholdings in over recent years, including Air Berlin, Alitalia and Jet Airways. In fact, just over 100 of this year’s pilot intake have come from these three airlines, all of which are restructuring their fleets. Being able to access a pool of experienced pilots within the extended Etihad family was one of the reasons the airline made the acquisitions.

“We offer everything a young pilot would want, including flying the latest technology”

CAPT RICHARD HILL

Chief operations officer, Etihad Airways

Next year’s recruitment numbers will be somewhat less than this year, although still significant at around 150, because pilots have already been taken on for aircraft due next year, says Hill. As with Emirates, Hill believes Etihad can offer a highly attractive career to expat pilots.

“The reason we’ve been successful is the opportunities we offer,” he says. “We offer everything a young pilot would want: a chance to fulfil a flying career on the latest technology and with a route network that covers the world.” ■



Etihad’s acquisitions over recent years have provided the carrier with a source of recruits

From yuckspeak to tales of yore, send your offcuts to murdo.morrison@flightglobal.com

A date with the Wright stuff

Thanks to Ian Goold for reminding us that Dassault's planned roll-out of the Falcon 8X on 17 December is the latest in a line of aerospace events timed to bask in the glory of the Wright Brothers' first flight.

Other notable occasions include the first flight of the Boeing B-47 Stratojet in 1947 and Douglas DC-3 in 1935, as well as the debut supersonic sortie of Burt Rutan's SpaceShipOne in 2003.

The day also marks official US Pan American Aviation Day, celebrated since 1940. It has nothing to do with the erstwhile airline, but is when the US president calls on citizens to "further aviation as an important stimulus to the further development of more rapid communications and a cultural development between the countries of the Western hemisphere".

Goold notes that one aircraft that missed the celebrated date – and indeed another crucial point in the calendar two weeks later – was the LearAvia LearFan 2100. Designed by Bill Lear, the composite business aircraft was to have been built in Belfast. Its first flight was famously recorded by officials as 32 December 1980, in order to meet a year-end deadline required to secure UK government funds.

Ministers agreed to pay up but the LearFan, sadly, was never built.

Scare-voyant

Aviation is discipline built on – and requiring utter faith in – the scientific principles of Galileo, Newton and Bernoulli. Should we be surprised, then, that Brazilian airline TAM changed a flight number based on a clairvoyant's prediction that the aircraft would crash?

Jucelino Nobrega da Luz – who foretold the deaths of Princess Diana and Ayrton Senna – warned that JJ3720,



Following Orville and Wilbur: DC-3 (top) and SpaceShipOne

destined for Brasilia, would develop engine trouble and crash on a named street shortly after departing São Paulo.

TAM bosses took no chances and switched numbers to JJ4732, claiming they had "indispensable information".

Seems to have worked: the aircraft made it safely to its destination.

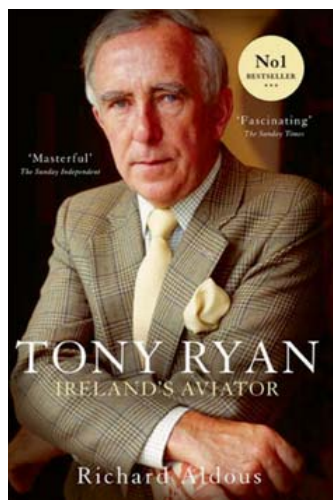
Life of Ryan

With the possible exception of his former assistant Michael O'Leary, Tony Ryan is Irish aviation's biggest name. A working-class country lad, he moved up the management ladder from baggage handler at Aer Lingus and made a fortune setting up leasing pioneer Guinness Peat Aviation – only to lose it after a disastrous flotation. He founded and gave his name to Ryanair, which had the image of the people's airline, bashing the complacent flag carrier, but was a basket case until he put his young lieutenant, O'Leary, in charge.

His final decade saw him regain his wealth as Ryanair

prospered – despite bitter disagreements with his protégé over the way the airline was run. When he died from cancer aged 71 in 2007, Ryan was a patron of the arts and one of Ireland's business grandees.

Richard Aldous's biography, *Tony Ryan Ireland's Aviator*, is a well researched, nicely told story and will appeal to anyone interested in Irish aviation and what drives an aviation entrepreneur. Details at Gillmacmillanbooks.ie



Ryan: lost and remade a fortune

Rota ratified

Dr Macnamara, Secretary to the Admiralty, said that the

100 YEARS AGO

hours of the anti-aircraft service, four and a half to five every second

night, had not been objected to by the men, but should any officer or man find the strain too great his post could, no doubt, be filled from the large waiting list, which now amounts to several hundreds.

Roaring Tigers

Re-rated Armstrong Siddeley Tiger IX engines give the big

75 YEARS AGO

Armstrong Whitworth Ensign a performance which,

considering the date of the design, must be considered very creditable, the top speed being 205mph and the cruising speed 170mph.

Double trouble

Stretching out the Concorde programme by building two

50 YEARS AGO

prototypes before tooling for production will not reduce the cost. In

the long term it may increase it. But it would be a compromise with attractions – as a political face-saver for the government, and as a technical risk reducer.

Pedal power

Engineering students of California Polytechnic State University succeeded in

25 YEARS AGO

making the tethered flight of their 45kg Da Vinci III human-

powered helicopter on 12 November. The craft rose, tilted and moved sideways. Hover was achieved for about 2s at about 11cm altitude.

100-YEAR ARCHIVE

Every issue of *Flight* from 1909 onwards can be viewed online at flightglobal.com/archive

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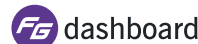
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Amity University, Noida, India
aryavartspace.org

8-10 February

Abu Dhabi Air Expo
Al Bateen Executive airport, UAE
abudhabiairexpo.com

16-18 February

Loyalty conference
Istanbul, Turkey
flightglobalevents.com/Loyalty2015

18-22 February

Aero India
Air Force Station Yelahanka, Bengaluru
aeroindia.in

24 February - 1 March

Avalon Airshow
Geelong, Australia
airshow.com.au

17-20 March

**Asian Ground Handling
International Conference**
Conrad Hotel, Macao
groundhandling.com

23-24 March

Operating Lease Masterclass
Park Plaza County Hall Hotel, London
everestevents.co.uk/events

25 March

European Corporate Aviation Summit
The Broadgate Tower, London
aeropodium.com

20-23 April

AeroDef Manufacturing
Hilton Anatole, Dallas
aerodefevent.com

29-30 April

Loyalty@Freddie Awards
Atlanta, USA
flightglobalevents.com/
loyaltyfreddies2015

4-7 May

AUVSI's Unmanned Systems
Atlanta, USA
auvsishow.org

10-11 May

Aviation Africa
Dubai, UAE
aviationafrica.aero

19-21 May

EBACE
Geneva, Switzerland
ebace.aero/2015

26-28 May

AP&M Europe
Olympia London, UK
apmexpo.com

31 May - 3 June

**1st International Symposium on
Sustainable Aviation (ISSA)**
Istanbul, Turkey
issasci.org

4-6 June

France Air Expo
Lyon-Bron airport, France
franceairexpo.com

15-21 June

Paris Air Show
Le Bourget, Paris
siae.fr



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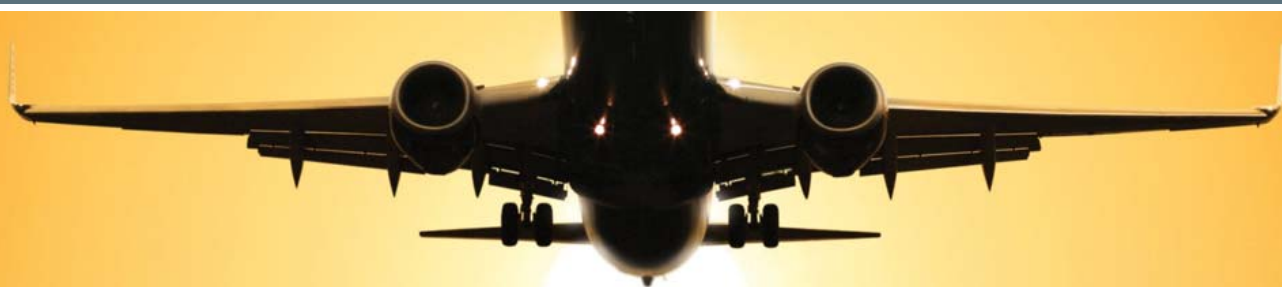
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Interested vendors may Submit the Two - Part tender in sealed covers (Technical & Commercial), with the details as mentioned in the RFP document to the address on or before 16.00 hrs on February 16th 2015. The tender No. NRSC/PUR/2011002265 shall be prominently written on the sealed covers.

All communications should be addressed to: **Head - Purchase & Stores Division, National Remote Sensing Centre (NRSC), ISRO, Balanagar, HYDERABAD, Telangana State, INDIA - 500 037. Phone: +91 40 2389 4065/ +91 40 2388 4066/ +91 40 2388 4071. Fax: +91 40 2387 8695. Email: purchase@nrsc.gov.in**

Note: 1) **Pre-bid meeting:** Pre-bid meeting between NRSC and vendors interested to submit the tenders will be held at 14.00 hrs on December 10th 2014 at NRSC (NDC front office). The full bio-data of vendors participating in the pre-bid meeting shall reach at least four days in advance before the pre-bid meeting to purchase@nrsc.gov.in/hpsd@nrsc.gov.in
2) Indian Vendors need to submit an amount of Rs. 220/- in the form of D.D, drawn in favour of Accounts Office, NRSC towards the cost of tender document. However, foreign vendors/small scale industries are exempted from submission of tender document fees of Rs. 220/-.

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WORK EXPERIENCE DAVID McROBERT

Flying, 9/11 and a brand new start

After deciding aeronautical engineering was not for him, David McRobert began a varied career that has seen him run a flight school at the time of the September 2001 attacks and launch a strategic marketing consultancy

Tell us about your career to date

Well, it's certainly been varied, exciting and rewarding. As a graduate aeronautical engineer, I knew sitting in front of a drawing board or computer screen wasn't for me. I wanted to be customer-facing, at the heart of business decisions, and close to aircraft. Then started a long and interesting journey through the world of engine services, professional flight training, business aviation and the supply chain. It sounds rather clichéd, but I'm lucky to have travelled the world and met, worked with and been inspired by many great people.

What sparked your interest in aviation?

It started when I was really young. My father was a very keen aero modeller and spent weekends flying his radio-controlled aircraft, often with me chasing after them when the signal was lost. Fortunately, he then learnt to fly and subsequently set up a private pilot training school. Weekends thereafter saw me either flying light aircraft, which led to my private pilot's licence at 17, or engaged in my other aviating passion, hang-gliding.

What have been the high and low points of your career?

That's a difficult one. One low point followed the tragic events of 9/11 when I was chief executive of the professional pilot training school at Oxford. The global airline pilot training market took a major downturn and most airline customers cancelled



McRobert obtained his private pilot's licence at the age of 17

their training schemes. My worst moment came when an airline's head of training called me to say that they were stopping all training immediately. The sadness of having to deliver the message to 30 students, young men and women, shattering their aviation dreams, was overwhelming and will always live with me.

Many high points are associated with winning contracts and successful business development projects, but probably the most notable and exciting came with launching my own business.

Tell us about your current venture

My new business is called Octant Marketing, which is a strategic aerospace and aviation marketing business. It's "strategic" because our primary focus

"Our industry has matured to the point where markets have become far more homogenous"

is to work with business leaders to help build business value by developing and aligning business, marketing and brand strategies. I started it with a partner after working together for a year on an exciting and successful commercial aviation global supply chain project, where we worked with the company's senior team to redefine their value proposition and launch a stronger brand. During this project,

and from our market research, we recognised that many other aerospace and aviation businesses would value similar services, and so Octant was born.

Why is having a strong brand strategy so important for aerospace and aviation companies?

It's very simple. Many markets have changed rapidly in recent years and our industry has matured to the point where markets have become far more homogenous, making it increasingly difficult for businesses to differentiate products and services. Surprisingly, in our industry, comparatively few businesses have really focused on developing their brand to differentiate themselves, whereas in other industries this is regarded as essential to convey who they are, what they do, why they do it and, crucially, why they are different. A strong brand strategy, aligned with robust business and marketing strategies, will create value in so many ways and, thankfully, more chief executives now acknowledge that their role needs to include being "chief brand officer" to achieve this objective. ■



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